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Role of Consortia in Library Cooperation

M. P. Satija* and Kanchana Dehigama**

Abstract:

In this article, the concept of library cooperation is presented in a logistic manner. Resource sharing efforts of two or more libraries provide better services to the community. Origin of library cooperation, Nature, Reason for formation of library cooperation, Models of library cooperation, Major barriers to cooperation, Criticism of cooperation, and the future scenario presented in the article.

Introduction:

Cooperation is a social activity as old as human civilization itself. The aim of any cooperation activity is to achieve what the members of the group cannot achieve individually. So library co-operation may be defined as a combined effort of two or more libraries to share their resources for providing better services to their user community.

The published literature indicates that the concept of cooperation is not new (Kopp 1998) and it refers to co-operation, co-ordination and collaboration between and amongst libraries for the purpose of sharing information resources.

However, libraries have not used it widely until about the 1980s. The main drive for co-operation has been the increase in the output of publication or the information explosion, the rise in the cost of publications coupled with stringent budget allocations, and growth in student enrolment (Nflila & Darko-Ampem 2002).

The term library co-operation, library networking, library linkages, library collaboration, and library consortia are used to describe formal and informal co-operation, partnership and resource sharing activities in libraries (Martey 2002). In the literature dealing with library cooperation a variety of words are used to define collaborative efforts. Brodie (1996) notes that “some of these are “action” words, such as connect, consult, cooperate, collaborate, collude; and “organization” and others refer to, for example, conference, committee, coalition, consortium, corporation, community. The beginning of all of these words comes from the short form of the Latin “with”. Despite different shades of meaning, such as degree of engagement or social acceptability, these words always suggest the coming together of distinct parties to achieve a common end, in activities usually limited in time space. In general, the participants in such activities maintain distinct roles and remain “in control” of the situation”.

Cooperation, as defined by Merriam-Webster’s Collegiate Dictionary, is “the action of cooperating with common effort; the association of persons for common benefit”(Merriam-Webster’s Collegiate Dictionary (n.d.).

In the APT review of 1995 (APT partnership, 1995), library cooperation is defined as: *The creation and operation of equitable, that is mutually ‘fair’, collaborative arrangements between libraries and information providers which enhance the common good though making*

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information available to all potential users (without obstacle to access by reason of cost) which is more extensive or more valuable to the user and/or is of lower cost to the collaborating providers .

Cooperation occurs at many levels from simple interlibrary loan services and to more direct resource sharing. The main objective of library cooperation is to maximize the availability of materials and services and to minimize expenses. The availability of a variety of electronic tools for documents identification and ever expanding availability of electronic data, network access to online catalogues and electronic documents has enhanced the awareness of library users about literature produced in their areas of interest (Majid, S, Eisenschitz, T S & Anwar, M A 1999).

The term “consortium” is derived from the field of economics and refers to the grouping together of different independent companies in order to bring together financial or material resources under a single managing body for the joint performance of specific operations. A consortium may comprise an informal group with reciprocal agreements between partners or it may constitute a separate legal entity in itself. A purchasing group may be considered as an example of an informal consortium (Chartron 2001). A library consortium helps libraries to get the benefit of wider access to electronic resources at an affordable cost and at the best terms of license. It can be introduced as a formal association of libraries, which is not under the control of same institution. It is usually restricted to a geographical area, number of libraries, types of materials, or subject interest, which is established to develop and implement resource sharing among members. Traditionally, the primary purpose of establishing a library consortium is to share physical resources amongst members. Access to resource is now considered more important than collection building.

The objective of library consortia is

- 1 control and reduce information costs,
- 2 improve resource sharing,
- 3 develop a network information environment (e.g. via campus systems, campus networks, and the Internet),
- 4 share licensing issues with each other (Hirshon 1998).

The term “Networking” has become inclusive encompassing relation or commutation between machines and that between professional with common interests. Khalid in 1997, (cited in Martey 2002) defines networking as a group of organizations that are formally interconnected, or participate with each other, for the accomplishment of predetermined objectives and having an organizational structure. Such systems may be functional (e.g. cataloguing), geographic (e.g. city or region) and/or sectoral (e.g. university libraries). At the same time, establishing good networks gives access to a pool of specialist people and services.

Resource Sharing in libraries are a powerful tool both for increasing productivity and enhancing services to meet the changing needs of library users. It is sharing of library resources such as document collection, staff members, technical facilities, and mechanical aids among the participating libraries on the basic principle of cooperation, “All for one and one for all”. In this respect it is possible to share the resources to provide on access to the least-cost. The objective of resource sharing is obviously to make the greatest amount of best information available to the most users at the reasonable cost. In essence, Resource Sharing is based on the concept that the collective strength and effectiveness of a group of libraries is greater than that of the sum of its individual libraries.

Thus Resource sharing is a need-based concept founded on the sound principles of give and take. It is not the quantum of exchange but the real desire to do so, that is essential to become part and parcel of the important programme of resource sharing activities.

Origin of Library Cooperation

The exact date for the introduction of the term “library cooperation” is not clear but the concept of a cooperation as being an association or partnership has long been a tenet of librarianship. Historically, the common form of library co-operation was the sharing of union catalogue information, storage facilities, collection development, and human resources at local, national, and regional levels (Henty 1993).

Library cooperation can be traced back to 200BC when Alexandria Library shared its resources with Pergamon Library. According to Kraus, there existed library cooperation among monastery libraries in the 13th century.

Cooperative efforts prior to the twentieth-century were quite limited in scope. There were exchanges of agreements among the universities of Lund, Abo and Greifswald as early as 1740. The other examples of library cooperation include a projected union catalogue of the libraries of Weimar and Jean and a proposal for a coordinated acquisition scheme for Wolfenbuttel and Gottengen.

The establishment of cooperation began at approximately the same time that librarians held their first conference, which was in 1853 (Stevens 1979). The ‘Catalogue of Manuscripts in various parts of India’ compiled by Whitney Stokes in 1868 and in 1863 Part I of Sanskrit manuscripts in private libraries of North-West provinces covering Varanasi was published. By calling a proposal was called for producing a national union catalogue, concept of accessing library materials from the universal point of view formally took shape.

Reports of the Co-operation Committee of the American Library Association appeared in the ALA Bulletin in the 1880’s. The first major union list entitled ‘A Catalogue of Scientific and Technical Periodicals’ were compiled by Henry C. Bolton in 1885. Melvil Dewey, in 1886 wrote about “library co-operation”, in an issue of the Library Journal. E.A. Mac presented views on “Co-operation versus competition” in the same publication in a year earlier (Kopp 1998).

With the advent of the 20th century, the library of Congress started cooperative cataloging projects and began working on the National Union Catalogue. Thereafter, in the 20th Century the compilations and publications of union catalogues of different types increased in number in most countries. Major developmental efforts with structured cooperative efforts with structured cooperative service programs began after the Second World War (McClarren 1981).

R.B. Downs’ futuristic view of library co-operation in a paper “One for all: a historical sketch of library co-operation, 1930-1970”, was included in the 1939 symposium organized by the ALA *The Library of Tomorrow* (Pathak S K & Deshpande Neela 2004). As a result, in 1970 the US Office of Education commissioned the Systems Development Corporation (SDC) to carry out a nation-wide study of academic library consortia. This study resulted in two major products:

- 1 The Directory of Academic Library Consortia

2 Guidelines for Library Co-operation: Development of Academic Library Consortia. It also identified 125 academic library consortia that were founded between 1931 and 1971 (Kopp 1998). The journal devoted to Library Consortium Management, first appeared in 1999.

A number of important organizations like Online Computer Library Centre in USA, National Library of Canada and cataloguing centre of the University of Toronto and British Library, facilitating library cooperation have been established to store and retrieve catalog records. Also a trend can be seen building network of libraries with common automation choices.

The nature of library Cooperation

The nature of the library cooperation dictates that an automation application must be able to address complex issues such as resource availability and sharing. Ongoing changes in information technology have caused cooperation to focus less than on policy issues and more on their technology base. Some library co-operations have gone so far as to work directly with vendors to develop system standards for integrated facilities targeting to move the focus toward technology that helps reshape libraries; to turn libraries into complete, integrated information resource facilities (Frasciello M J & Richardson John 1999).

Another form of co-operation has been based mainly on inter-library lending (ILL) services where co-operation libraries agree to enter into reciprocal borrowing and use of materials from other libraries (Kohl 1997). This form of co-operation enabled libraries to borrow books and periodical articles which were not available locally. The sending of requests and delivery of materials used postal, fax and courier services. Perhaps the role of consortia in sharing expertise on library automation was another reason for the growth in such organizations in the 1980's (Nfila & Darko-Ampem 2000). Increasing demand for service from customers together with the need to improve inter-lending services and the library collection are additional factors. Both academic and public libraries have achieved great benefits from co-operation. However, library consortia differ since they depend on the objectives, mission, philosophy and geographical location of the participating libraries.

Reasons for formation of Library Cooperation

It is crucial to recognize and understand the needs for developing more locally responsive cooperative network plans and strategies by building dynamic cooperative library network system. Library co-operations are placing emphasis on computerized multi library networks involving shared databases, telecommunication links and common applications. Currently, there is a new focus on cooperation building worldwide for the following reasons, among others:

- 1 The quality of service is enhanced
- 2 The cost of service is reduced
- 3 Duplication of stock is minimized. (Alemna & Antwi).

Different reasons for library networks has been enumerated (Hayden 1998) as follows:

- 1 Increase in efficiency
- 2 Standardization of policies, procedures and practices among network users
- 3 Bringing together diverse ideas and issues into forum
- 4 Ensuring that information is redundant

Potter (1997, p.417), identifies main reasons for the formation of consortia. He cites the sharing of existing physical resources as the chief reason, and the purpose of identifying an

addressing common needs arising from developments in information technology as being the other. He noted the growing importance of the Internet and the World Wide Web and the possibility of offering a variety of electronic resources across the Internet.

Reasons for formation of library cooperation can be listed as follows:

- ⌘ An interest in co-operative projects that might benefit all students and faculty of the participating libraries;
- ⌘ Providing enhanced library services with an emphasis on access to new electronic resources including database, and services offered through the Internet and the World Wide Web.
- ⌘ Controlling building costs by providing regional storage facilities
- ⌘ Expediting interlibrary borrowing which has evolved into providing as many electronic resources as possible at the lowest cost to consortia members;
- ⌘ Initially to ensure that students and faculty at all the universities had equally access to the same type of materials, which has shifted to include electronic resources; and
- ⌘ Better sharing of existing resources and jointly acquiring new resources at great savings (Nfila & Darko-Ampem 2002).

Allen and Hirson (1998, p. 37.) indicate “The most important development for academic libraries during the current decade has been the move from organizational self-sufficiency to a collaborative survival mode as personified by the growth of library consortia”. According to them, from 1980-19990 library cooperation’s developed primarily for three reasons:

1. to leverage resources by sharing existing collections or resources through virtual union catalogues;
2. to reduce the cost of member library operations by obtaining a group purchase price for information products
3. to bring pressure to bear on information providers, especially publishers, to reduce the rate of rise in the cost of purchasing information

G.E. Gorman and R. Cullen (2000, p. 374) points out 6 principal reasons for co-operation.

- 1 to fill existing gaps in coverage of some specific area within the universe of knowledge, or to reduce duplication in holdings;
2. to co-ordinate collection management decisions related to weeding, cancellations, storage, preservation, etc;
- 3 to achieve better understanding of collection management and development practices among related libraries;
- 4 to co-ordinate future collection development planning;
- 5 to establish mutually agreed collecting responsibilities for specific disciplines, formats etc.;
- 6 to acquire joint site licenses for shared databases.

Models of library cooperation

Many models and many approaches to co-operation have been developed and utilized successfully. Some are relatively simple, others far more complex, but all of them have

considerable potential in a variety of environments. Sinclair typology remains a valuable guide today, which has been introduced more than 25 years ago by Michael Sinclair 1973 (cited in Gorman 2000). He proposed four useful models of cooperative activity among libraries, which can be used in Asian libraries:

- 1 Bi-nodal partnership
Pair of libraries, agreed to exchange information and materials
- 2 Multi-nodal partnership
Extension of the bi-nodal model in which a number of libraries contribute to a common collection.
- 3 Service partnership
One library in a pair or a group makes available its facilities to produce a group output such as a co-operative OPAC.
- 4 Outsourcing partnership
An external organization is engaged by the participating libraries to provide a common service.

Apart from the above Gorman and Cullen (2000, pp. 135-144) suggests the ways in which Asian consortia and networks might be conceptualized and developed. According to their views the models are hierarchical, moving from simpler to more complex, and from stand-alone to mutually integrated. They propose following knowledge models to be applied in library networks in Asia:

- 5 The Networked Library Model
- 6 The co-operative Network Model
- 7 The knowledge environmental Model

Major barriers to co-operation

In many libraries there is a little will to succeed in a co-operative activity beyond the most rudimentary because of an underlying desire or need for each library sector or even individual library. Even if the impediment of autonomy and self-sufficiency can be overcome, there are other barriers of a similar nature.

1. Legal sanction by the administration of the network members
2. Adequate financial support
3. Absence of national library and information policy in all field
4. Skilled, trained professional personnel
5. Non-availability of union catalogues and absence of proper bibliographic control of information
6. Absence of appropriate library standards
7. Technological facilities
8. Appropriate leadership with proper knowledge
9. Mindset of library professionals/Local autonomy and institutional administrative differences
10. Proper communication facilities

Oh and Change (2006, p.5) points out that there are several possible barriers to the effective cooperative library network system such as:

- 1 Structural barriers
- 2 Administrative barriers
- 3 Technical barriers
- 4 System barriers
- 5 Political barriers

Evans (1995), in the third edition of *Developing Library and Information Centre Collections*, devotes considerable space to barriers to co-operation under six headings:

- 1 Institutional
- 2 Legal, political and administrative;
- 3 Technological;
- 4 Physical;
- 5 Human and
- 6 Knowledge-based issues.

However, Gorman and Cullen (2000, pp. 374-375) argues, that the above impediments are unrealistic and pessimistic. Further they state that Evans tend to give minor problems the same level of significance as major barriers. Therefore, they presents another four major barriers to effective ventures:

- 1 Desire for autonomy
- 2 Competitive environment
- 3 Changing institutional focus
- 4 Financial constraints

Criticism of Co-operation

Co-operation, despite its various advantages, has certain disadvantages too. The critics voice concern on the following points:

- 1 If all libraries depend on resource sharing, no library will have books to lend;
- 2 If cooperative acquisition doesn't operate well, serious gaps in the collection of a library will result;
- 3 Without the sophisticated technology, resource sharing would have very limited value;
- 4 Cost consideration may not permit resource sharing;
- 5 The reaction of the publishing trade, if their sales gets reduced;
- 6 Large libraries have to share a greater burden of lender rather than borrower which is not beneficial to them.

Future Scenario

As stated above cooperation amongst institutions for sharing their library resources has been practised for decades. Traditionally, the primary purpose of establishing a library cooperation is to share physical resources, including book and periodicals, amongst members. Enhanced user services and greater satisfaction of user wants and needs must be a principal rationale for any sort of co-operative activity among libraries; libraries worldwide recognize that they can no longer Endeavour to own all the materials that their readers need or want, and that sharing is necessary in order to achieve maximum reader satisfaction.

However, the mode of cooperation has been transformed with the infusion of new information technology, whether in the print-based environment or the digital environment. The technology provides an unparalleled medium for delivery of information with greater speed and economy (Arora 2003).

The future scenario of resources sharing could be terms as 'Global resources sharing interconnections'. Not only are these interconnection going to grow because of Internet and electronic publishing, but their growing trends are felt at various regional grouping tow. There will be a gradual move towards greater integration of services and resource sharing.

Reference List

1. Alemna, A. A. & Antwi, I. K. (2002). A review of consortia building among university libraries in Africa. *Library Management*, vol. 23, (4-5), pp. 234-238.
2. Martey, A. K. (2002). Management issues in library networking: focus on a pilot library networking project in Ghana. *Library Management*, vol. 23, (4-5), pp. 239-251.
3. Allen, B. & Hirshon, A. (1998). Hanging together to avoid hanging separately: opportunity for academic library consortia. *Information Technology & Libraries*, vol. 17, (1), pp. 36-44.
4. APT partnership (1995). *The Apt reviews: a review of library and information cooperation in the UK and the Republic of Ireland*, Sheffield, Library and Information Co-operation Council.
5. Arora, Jagdish (2003). Indian National Digital Library in Engineering science and Technology (INDEST): A proposal for strategic cooperation for consortia-base access to electronic resources. *International Information and Library Review*, vol. 35, pp.2.
6. Brodie, Maxine (1996). *connected intelligence: the power of library collaboration*, retrieved 15 September 2006, <http://www.csu.edu.au/special/raiss99/papers/mbrodie.html>
7. Chartron, G. (2001). Electronic resources and documentary consortia: a survey of French Scientific Institutions. *Journal of Librarianship and Information Science*, vol. 33, (2), pp. 85-97.
8. Evans, G. E. (1995). *Developing Library and Information Centre Collection*, 3rd. Libraries Unlimited, Englewood, Co.
9. Frasciello, M. J. & Richardson, John (1999). Distributed processing and Windows NT: the ideal infrastructure for library consortia. *Library Consortium Management: an International Journal*, vol. 1, (3-4), pp. 76-83.
10. Gorman, G. E. & Cullen, Rowena (2000). The knowledge model applied to library networks in Asia. *Library consortium Management: an International Journal*, vol. 2, (7), pp. 135-144.
11. Gorman, G. E. & Cullen, Rowena (2000). Models and opportunities for library co-operation in the Asian Region. *Library Management*, vol. 21, (7), p. 374.
12. Hayden, M. (1998). *Teach yourself networking in 24 hours*, Carmel, Sams Publishing.
13. Henty, M. (1993). Resource sharing among Australian libraries. *Library Acquisition: Practice and Theory*, vol. 17, (3). pp. 311-317.
14. Payne, L. (1998). The Washington Research Library Consortium: a real organization for a virtual library. *Information Technology and Libraries*, vol. 17, (1), pp. 13-17.
15. Hirshon, A. (1998). Academic Library Consortia: Past, Present and Future. retrieved on 10 August 2006 <http://leigh.edu/~arth5/arh5.html>

16. Khalid, H. M. (1997). Cooperation and networking in university libraries. [PhD thesis], Manchester Metropolitan University, Manchester.
17. Kohl, D. (1997). Resource sharing in a changing Ohio environment. *Library Trends*, vol. 45, (3), pp.435-47.
18. Kopp, J. (1998). Library consortia and information technology: the past, the present and the promise. *Information Technology and Libraries*, vol. 17, (1), p. 8.
19. Lehman, J. O. (1969). Cooperation among small academic libraries. *College and Research Libraries*, vol. 30, (6), pp. 491-497.
20. Majid, S., Eisenschitz, T. S. & Anwar, M. A. (1999). Resource Sharing among agricultural libraries in Malaysia. *Library Review*, vol. 48, (8), pp. 384-394.
21. McClarren, R. R. (1981). Public library cooperation and cooperatives: an historical overview. *Public Library Quarterly*, vol. 2, pp. 5-15.
22. Merriam-Webster's Collegiate Dictionary (n.d.), retrieved on 12 September 2008, <http://www.britannica.com/cgi-bin/dictionary?va=cooperation>.
23. Molefe, Chedza (2003). Current developments in library cooperation among special libraries in Bostwana. *South African Journal of Library & Information Science*, vol. 69, (1), pp. 2-10.
24. Nflila, R. B. & Darko-Ampem, K. (2002). Developments in academic library consortia from the 1960's through to 2000: a review of the literature. *Library Management*, vol. 23, (4/5), p. 203-213.
25. Potter, W. (1997). Recent trends in statewide academic library consortia. *Library Trends*, vol. 45, (3), pp. 416-34.
26. Oh, K & Chang, Y. K. (2006). Developing a dynamic Korean public library network system. *World Library an Information Congress: 72nd IFLA General Conference and Council*, 20-24 August 20006, Seoul, Korea, retrieved on 29 March 2007, <http://www.ifla.org/IV/ifla72/index.htm>.
27. Pathak, S. K. & Deshpande, Neela (2004). Importance of consortia in developing countries-an Indian scenario. *The International Information & Library Review*, vol. 36, pp. 227-231.
28. Sinclair, M. P. (1973). A typology of library cooperatives. *Special Libraries*, vol. 64, (4), pp. 181-86.
29. Stevans, N. D. (1979). An historical perspective on the concept of networks: some preliminary considerations. In B. E. Markuson & B. Woolls, (eds), *Networks for Networkers: Critical issues in Cooperative Library Development*, New York, Neal-Schuman.

BIBLIOGRAPHIC STUDY OF DOCTORAL THESIS IN MANAGEMENT
AND COMMERCE IN JIWAJI UNIVERSITY, GWALIOR UP TO 2005

Dr. Ram Gopal Garg* M. K. Rajput & Govind Kumar Gautam*****

Abstract

This study investigates the rate of successfully doctorates awards in the department of Commerce and Management at Jiwaji University Gwalior (MP). The distribution of Ph.D. Thesis analyzed during the period from establishment to 2005. This Study show the core field of doctoral research in Commerce & Management in the Jiwaji University. In this study, quantitative analysis has been done according to subject-wise chronologically, guide wise and gender wise.

Introduction:

Research is the most remarkable phenomenon of development in any subject. It is the most important tool for the advancement of knowledge, scientific discoveries, technological achievement and scholarly publication. It is carried out to develop new concepts, theories and contribute towards new knowledge. All subjects require continuous research support to develop as a discipline. "Commerce and Management" which are developed as an independent and vital discipline, needs constant improvement and development through research.

Jiwaji University, Gwalior came into existence as may 23rd, 1964 by the Madhya Pradesh Act No. 15 of 1963. The academic activities in the university campus also were started with postgraduate teaching and research in 1966 by establishing school studies in Botany and Zoology; this was followed by other schools of studies in different disciplines. Department of Commerce was started in 1980 in the campus. There after the department started the Post Graduate Management course. This department was pioneer to start the MBA course in the city which attracted the attention of students of near by region. In Commerce and Management, there are also various colleges which are actively extending their cooperation towards education and research for their field of education.

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Aims and Objectives of Study:

Aims and objectives of the present study are as follows:

- (i) To analyse research productivity
- (ii) To analyse Subject-wise, Year-wise and Gender-wise research productivity.
- (iii) To analyse research thrust area.
- (iv) To analyse research trends in commerce and management science.
- (v) To analyse most productive Guide.

Scope and Limitation of the study:

Scope of the present study is limited to Commerce and Management. Present study cover only Commerce and Management theses during period of 1975 to 2005 and 1999-2005 respectively which are available at Central Library, Jiwaji University at the time of investigation. Page-wise, references-wise, researcher's occupational backgrounds, guide's gender-wise aspects are not taken in this study.

Methodology:

Bibliographical survey method is adopted for data collection based on certain access points or aspects.

Analysis of Data:

Data were collected manually from each thesis of Commerce and Management subject on the basis of predetermined point of views on separate sheet and these data were classified, analyzed and arranged under certain aspects which are discussed under following paragraphs.

Management-

Year-wise Distribution of Theses: (Management)

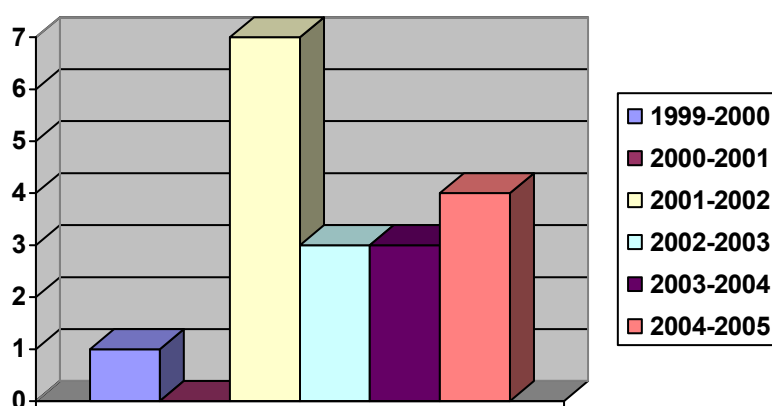
Year-wise distribution of data represented by Table 1 and Fig. 1. The Trend of data reveals that chronological distribution of Ph.D. theses, in 2001-2002, the

distribution rate was very high and very low in 2000-2001.

Table 1 : Year-wise Distribution of Thesis (Management)

S. No.	Year	Distribution of thesis	%	Cumulative Distribution	Cumulative percent.	Rank
1.	1999-2000	1	5.5	1	5.5	IV
2.	2000-2001	0	0	0	0	0
3.	2001-2002	7	38.8	8	44.4	I
4.	2002-2003	3	16.6	11	61.1	III
5.	2003-2004	3	16.6	14	77.7	III
6.	2004-2005	4	22.2	18	100	II

Figure: 1 Chronological Distribution of Theses (Management)



Subject-wise Distribution of Theses : (Management)

Subject-wise distribution of Ph.D theses shown in table 2. This table indicates that out of 18 theses maximum 7 theses are found in the field of Marketing Management followed by 4 each in Financial Management and Management process, 1 in Business Communication and 1 in Business Ethics during the period year interval 2000-2005.

Table 2 : Subject-wise Distribution of Theses (Management)

Subject	2000	2001	2002	2003	2004	2005	Total
Management Process	1	-	-	1	1	1	4

Business communication	-	-	-	1	-	-	1
Marketing Management.	-	-	2	1	2	2	7
Financial Management.	-	-	3	-	-	1	4
International Environment Management	-	-	1	-	-	-	1
Business Ethics	-	-	1	-	-	-	1

Gender-wise Distribution of Theses: (Management)

Table-3 depicts that 77.77% of the male candidates and the remaining are found occupied by female candidates. Among female candidates maximum two Ph.D theses are produced in Financial Management followed by 1 each in Management Process and Marketing Management while the male candidates are found dominates in research activities over the period of 2000-2005.

Table 3 : Gender-wise Distribution of Theses (Management)

Subject	Number Theses		
	No. of Male	No. of Female	Total
Management Process	3	1	4
Business communication	1	-	1
Marketing Management	6	1	7
Financial Management	2	2	4
Financial Management	1	-	1
Business Ethics	1	-	1
Total	14	4	18

Guide-wise Distribution of Ph.D. Thesis: (Management)

Collected data are analysed, classified and grouped into Table as per guide-wise aspect the overall guide-wise distribution of Ph.D. thesis are shown in Table 4. This Table indicates that overall 14 guides guided 18 Ph.D. scholars. Out of 14 guides, maximum number of theses 7 related with Marketing Management are guided by 4 guides, 4 these by 4 guides and so on. Individual guide-wise research productivity Table 5 indicates that maximum 3 theses are guided by each Prof. U. Holani, Dr. S.K. Shukla and Dr. S.K. Singh followed by 2 thesis each by Dr. S. Kulshrestha, Dr. J.C. Varshney and Dr. K.S. Thakur, and rest of theses guided by other guide.

Table 4 : Guide-wise Distribution of Ph.D. Thesis (Management)

Subject	No. Of Guide	No. of Ph.D. thesis
Management Process	4	4
Business communication	1	1
Marketing Management	4	7
Financial Management	3	4
Financial Management	1	1
Business Ethics	1	1
Total	14	18

Table 5: Individual Guide-wise Distribution theses (Management)

S.No.	Name of Guide	No. of Theses
1.	Dr. U. Holani	3
2.	Dr. S.K. Shukla	3
3.	Dr. S.K. Singh	3
4.	Dr. Sandeep Kulshrestha	2
5.	Dr. J.C. Varshney	2
6.	Dr. K.S. Thakur	2
7.	Dr. M.S. Vardani	1
8.	Dr. A.K. Bajpai	1
9.	Dr. S.K. Sharma	1
	Total	18

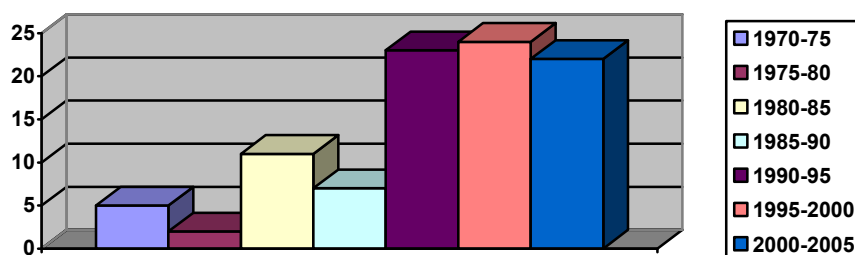
Commerce: Year-wise Distribution of Thesis: (Commerce)

Year-wise distribution of data represented by Table 6 and Fig. 2. The Trend of data reveals that chronological distribution of Ph.D. theses, in 1995-2000, the distribution rate was found very high and very low in 1975-80. The trend also reveals that distribution rates are uneven during year interval and in last interval it is decreasing in order.

Table 6 : Year-wise Distribution of Thesis (Commerce)

S. No.	Year	Distribution of thesis	%	Cumulative Distribution	Cumulative percent.	Rank
1.	1970-75	5	5.31	5	5.31	VI
2.	1975-80	2	2.12	7	7.43	VII
3.	1980-85	11	11.7	18	19.13	IV
4.	1985-90	7	7.44	25	26.57	V
5.	1990-95	23	24.66	48	51.03	II
6.	1995-2000	24	25.53	72	76. 56	I
7.	2000-05	22	23.44	94	100	III

Fig. 2 Chronological Distribution of theses (Commerce)



Subject-wise Distribution of Thesis: (Commerce)

Subject-wise distribution of Ph.D theses shown in table 7. This table indicates that out of 94 theses, maximum 41 (43.64%) theses are found in the filed of Human Resources Development followed by 21 (22.34%) in Marketing Management, 12 (12.76%) in Financial Analysis and Control 9 (9.57%) each in Banking Insurance and Management Service so on during the period of year 1970-2005.

Table 7: Subject-wise Distribution of Ph.D. Thesis (Commerce)

Subject	No. of Ph.D. thesis
Human Resource Development	41
Marketing Management	21
Financial Analysis & Control	12
Banking Insurance	9
Management Service	9
Accounting	1
Taxation	1
Total	94

Gender-wise Distribution of Thesis: (Commerce)

Table-8 depicts that 81.91% of the male candidates and the remaining is found occupied by female candidates. Among female candidates maximum number of eight Ph.D. theses are produced in Human Resource Development followed by six Marketing Management while the male candidates are found dominates in research activities over the period of 1970-2005.

Table 8: Gender-wise Distribution of Ph.D. Thesis (Commerce)

Subject	Number of Thesis		
	Male	Female	Total
Human Resource Development	33	8	41
Marketing Management	15	6	21
Financial Analysis & Control	12	0	12
Banking Insurance	7	2	9

Management Service	8	1	9
Accounting	1	0	1
Taxation	1	0	1
Total			94

Guide-wise Distribution of Ph.D. Thesis:

Collected data are analysed, classified and grouped into guide-wise aspect, the overall guide-wise Distribution of Ph.D. theses are shown in Table 9. This Table indicates that overall 54 guides guided 94 Ph.D. scholars. Out of 54 guides, maximum number of theses 41 related with Human Resource Development are guided by 19 guides, followed by 21 these by 11 guides, and so on. Individual guide-wise research productivity indicates that maximum number of theses 15 are guided by Prof. M.K. Sahu followed by 11 theses by Dr J.C. Varshney, 10 thesis by Dr. D.C. Sharma and so on as seen in tables-

Table 9 : Guide-wise Distribution of Ph.D. Thesis (Commerce)

Subject	No. of Guide	No. of Ph.D. thesis
Marketing Management	11	21
Financial Analysis & Control	7	12
Human Resource Development	19	41
Accounting	1	1
Taxation	1	1
Banking Insurance	8	9
Management Service	7	9
Total	54	94

Table 10: Individual Guide-wise Distribution of theses (Commerce)

Sl.	Name of Guide	No. of theses		S.No.	Name of Guide	No. of theses
1.	Dr. M.R. Sahu	15		14.	Dr. M.S. Vardhani	2
2.	Dr. J.C. Varshney	11		15.	Dr. K.S. Sharma	2
3.	Dr. D.C. Sharma	10		16.	Dr. S.K. Singh	2
4.	Dr. S. Maheshwari	8		17.	Dr. S.N. Chaturvedi	2
5.	Dr. N.C. Jain	7		18.	Dr. U.C. Gupta	2
6.	Dr. U. Holani	5		19.	Dr. K.L. Pandey	1
7.	Dr. S.P. Sharma	4		20.	Dr. Kameshwar Jain	1
8.	Dr. P.L. Sablok	3		21.	Dr. M. Chaturvedi	1
9.	Dr. K.S. Thakur	3		22.	Dr. M.K. Vaidya	1
10.	Dr. S.C. Saxena	3		23.	Dr. O.P. Shrivastava	1
11.	Dr. S.M. Shukla	3		24.	Dr. P.K. Bansal	1

12.	Dr. B.S. Gupta	2		25.	Dr. R. Jain	1
13.	Dr. M.K. Jain	2		26.	Dr. R.C. Mehta	1
					Total	94

Conclusion: After analysis of data we can conclude that -

94 These in Commerce and 18 theses in Management Science were produced in Jiwaji University Gwalior during year 1970-2005. The first PhD in commerce was produced in 1970 while in management first PhD was awarded by University in the year 2000. In Commerce and Management Sciences the major thrust area of research are found as Human Resource Development, Marketing Management and Financial Analysis and Control. While the others areas are less preferred. In Commerce and Management Science male researchers are found dominant in research activity. Few Guides are found most productive in researches of both field. Less number of research productivity in Management Sciences occurred due to late establishment of department.

More researches may be conducted and to encourage the scholars in the development of the emerging fields of Management Sciences so that the resources available in the country could be utilized for the betterment of human being and society. In further research citation analysis, author dispersing subject dispersion, Geographical dispersion, form dispersion, page wise distribution, of references, etc. are not studied in this study but considered for further study.

References:

1. Rajput, M. K. (2007) Bibliographical study with annotation of doctoral thesis in commerce and management in Jiwaji University, Gwalior up to 2005. R.G. Garg (Guide), Jiwaji University, Gwalior, [M. Phil Dissertation].
2. Baghel, D. S. (2003) Research Methodology. Agra, Sahitya Bhawan Publication & Distribution. pp. 40-49.
3. Bhusan, Y. K. (1994), Fundamentals of Business Organization & Management. New Delhi, Sultan Chand & Sons, pp. BS-29 to BS-39.
4. Ravi, S. and Mohan, B. (2007) Doctoral Studies in Faculty of Science in Annamalai University. *ILA Bulletin*, Vol. 43. (1) pp. 33-40.

ROLE OF INFORMATION COMMUNICATION TECHNOLOGY IN LIBRARY AND INFORMATION SERVICES

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Abstract

The present paper is related to ICT and its role in library and information services. Generally, a user visits the library & Information centre for borrowing or consulting books and journals. But due to information explosion it would not be possible for any library & Information centre to acquire all documents published in a discipline. Hence the user may get pinpointed useful needed information through the various modernized services of the libraries and information centres.

Introduction:

Information Communication Technology has become the most widely used and pronounced buzzword of the computer industry. It has helped all walks of life in one way or another. ICT is the modern science of gathering, storing, manipulating, processing and communicating desired types of information in a specific environment. Computer Technology and communication technology are the two main supporting pillars of this technology and the impact of these two in the information storage and dissemination is vital (Mahajan, 2002). ICT is helping the society in different ways. More and more parts of the world are entering into the field of Net by the use of ICT and serving in many ways for different purposes at a time. The information technology has developed high hopes in the modern superhighway societies. People are expecting an 'Information Society' with multidimensional facilities.

The Net or Information Super Highway or Cyberspace or the open communication Infrastructure is an amalgamation of thousands of computer networks, and computers have revolutionized resource sharing and access. Technology based communication has overcome all the barriers of information access. The physical walls of library are less significant. Today the concept of library is changing from bringing the user to the library to taking the library to the user.

Technology has provided the means of managing knowledge through the strengthened capabilities of collecting, storing, processing, packaging and transmitting the information. Librarians must continuously update themselves with knowledge and skills in the areas of information resources, tools, access modes, technology, management and research and the capability to integrate all these for rendering library and information services efficiently and effectively (Vatnal & Prakash, 2004). Information retrieval, information processing, information dissemination and communication are modernized which is a landmark achievement in the field of Library and Information Science.

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Internet:

Today the networking of computers plays an important role in communication and dissemination of information. Through Internet, every part of the world is connected to share the information. Internet as a global network of networks is a world wide web of interconnected networks. It is made up of LANs, MANs and WANs of the whole world .It is inter-networking that denotes interaction between networking of computers. It is an umbrella under which different networks, small and big freely exchange information across the world.

The avenues for exploitation of internet resources by libraries are unlimited and endless. It provides access to a variety of commercial and non-commercial information sources including bibliographic and full text database, table of contents of primary journals, electronic and on-line journals, books and newsletters, library catalogues and OPAC's graphics database, multimedia walk through programs, audio-visual clip art database, e-mail, directories, product catalogues, etc. More over Internet is also a test bed for electronic document delivery, electronic publishing, publicity and marketing of products and services, training and education, integrated access to local and external information. Electronic resources which are available on the Internet, generally indicated as Networked Information Resources (NIR'S). Although access to most NIRS is currently uncontrolled and free, controlled access (through user registration and passwords), and fee based access are options, which allow the addition of commercial and copyrighted materials to the range of networked information resources (Mackenzie & Wiereck,1996)

A critical factor in the effective use of the resources is the foundation of a common ground of standards, which is necessary for the improvement of their interoperability. The concept of interoperability includes wide usefulness (re-usefulness), portability (across networks, systems and organizations) and longevity (portability across time) The key to the interoperability of content is consistency which is achieved through the use of standards (Gill & Miller, 2002)

Database service:

A number of commercial database in various disciplines are available in electronic forms e.g. INSPEC, Compendex, Medline, Agricola, Chemical Abstracts. CAB Abstracts, Biological Abstracts etc. There are sources which displays useful and latest information published in journals and directories e.g. Ingentia Journals, ARL Directory of Electronic journals etc. These sources give information about electronic journals, newsletters, Online Services in various disciplines.

Communication and Interaction:

The application of information-communication and user-interaction to library is most important and vital. The information needs of the user should be communicated to the librarians, the librarian communicates the proper link to the

user to get the information. Suppose user is not satisfied, then places his observations and interactions to the librarians. The librarian will clarify the problem and correct it. Thus modern converging technologies facilities communication and interaction facilities to user (Mestri & Goudar, 2002).

Reference and Information Services:

Internet for reference work in the library is gaining popularity. It can also becomes possible for librarians to provide services like SDI,CAS, Abstracting services etc in its changed mode with web environment.

Resource Sharing and Consortia:

Resource sharing signifies the cumulative efforts to achieve maximum service through minimum efforts. For resource sharing library networks are established e.g. Delnet, Calibnet, Malibnet, Inflibnet, Sirnet, Ernet, Nicnet etc. The effective electronic transmission of requests and messages through on-line system is made possible and it helps quicker and easier communication between member library and their users. By using their resources and interactive system, the libraries may share their resources. Quality e-journals available under UGC INFLIBNET OR INDEST-AICTE consortium on subscription to universities and institutions respectively.

Digital Libraries:

A new digital paradigm for the library has been developed through the creation of bibliographic, factual and full text databases, the application of powerful inquiry technologies, and their linkage through complex communication networks (Berring 1993) . The model is referred to as the 'digital library', 'Virtual library' or even 'crbrary'. In its narrowest sense the digital or virtual library can be considered to be merely an 'online repository of electronic texts'.(Ince2001) or ' electronic stock of information which can be accessed via databases'(Dictionary of library and information management 1797). Both of these definition focus on storage and access to context but miss the other dimension of a library. A system providing the services of a library in digital form (Johnson, Gregory et.al. 2000) offers an alternative definition which better describe a library operating electronically.

The digital library is the result of information proliferation and technological advances. In comparison to conventional libraries, digital libraries provide efficient and qualitative services by collecting, organizing, storing, disseminating, retrieving and preserving the information. The major areas which offer digital libraries great exploitation are: information retrieval, multimedia database, data mining, data warehouse, on-line information repositories, image processing, hypertext, world wide web and wide area information services (Fox 1993)

Thus the library as a building is changing to the library as an environment of electronic services established on a computer server or a network of cooperating servers. The client is not obliged to go to a certain place for searching and retrieving

his information, since the information is coded in a binary form being available to any person linked locally or through the Internet to the specific server.(Dendrinos,2005)

Conclusion:

Much of the future will undoubtedly be decided by our own response to the new communication technology. If we embrace the technology and exploit its capability to the full, it can only broaden and fulfill our professional aspiration. However, technology has to be used as a tool to render assistance to achieve our goal of the profession to serve the end-user as providers of information, pinpointedly, expeditiously and exhaustively. Through the application of converging technologies to the library, the concept of a paperless society and paperless library will come to be true.

References:

1. Berring, R.C. (1993). Future librarians, in Future libraries. Berkeley, University of California press, pp. 94-115
2. Dendrinos, M. (2005). From the Physical Reality to the Virtual Reality in the Library Environment. *Library Philosophy and Practice*. Vol. 7,(2).
3. Dictionary of Lib. & Inf. Management, (1997). Xreferplus, Peter Collin Publishing.
4. Fox, E. A. (ed.) (1993). Source Book on Digital Libraries. Technical Report, Dept. of Computer Science, Virginia Tech.
5. Gill, T. and Miller, P. (2002). Re-inventing the wheel? Standards, Interoperability and Digital Cultural Content. D-lib Magazine, Vol. 8, No. 1 (Jan), pp. 3
6. Ince, D. (2001). A dictionary of the Internet, Oxford University Press.
7. Johnston, R. et.al. (2000). The dictionary of human geography, xreferplus, Oxford, Blackwell.
8. Mackenzie, J. S., & Wierck, A. (1996). Knowledge models for networked library services-libraries in the information society. European Commission, DG XIII-E/4. p.9
9. Mahajan, S.L. (2002). Information Communication Technology in Distance Education: A challenge. University News, Vol. 40, No. 19.
10. Mestri, M. & Gouder, P. K. K. (2002). E-learning and its application in Lib & Inf. Services. University News, Vol. 40, No. 7.
11. Vatnal, R. M. & Prakash, K. (2004). Introducing Electronic Information Resources Through E-learning Mechanism. University News, Vol. 42, No. 14.

PRESERVATION METADATA: NEED OF DIGITAL ERA

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Abstract

Meta Data generally known as an amplification of traditional bibliographic cataloguing practices in a digital environment. In digital objects, metadata can be assigned descriptive, Administrative and structural categories. Digital information needs detailed metadata to ensure its preservation and accessibility for future generations. So the Meta data required to preserve a traditional information resource. The purpose of preservation metadata is to support and facilitate digital preservation. The preservation Meta data need high level description of the major functional components/ processes of a digital archiving system. Meta data would bind the constituent components together into a single logical chain. This paper helps to know various methods, which are using in preservation to metadata. It is explained here that the implementation of metadata as part of a digital preservation system may assist repositories in enabling the management and re-use of metadata and may also help interoperability, namely the exchange of metadata and information packages between repositories.

Introduction

Digital Libraries, the contribution of web technology has allowed users to access digital information resources from virtually anywhere in the world. Digital libraries have to be planned implemented and supported by the library professionals. Digital collection need protection not only for unauthorized access but it need protection in data corruption and damage also. Metadata is used to facilitate the understanding, characteristics, and management usage of data. Meta data preservation is the link between the metadata and the digital preservation. It required for effective data management with the various type of data and context of use. In a library, where the data is the content of the titles stocked, metadata about a title would typically include a description of the content, the author, the publication date and the physical location.

Preservation metadata is information that supports and documents the long-term preservation of digital materials. It addresses an archived digital object's provenance, documenting the custodial history of the object; authenticity, validating that the digital object is in fact what it purports to be, and has not been altered in an undocumented way; preservation activity, documenting the actions taken to preserve the digital object, and any consequences of these actions that impact its look, feel, or functionality; technical environment, describing the technical requirements, such as hardware and software, needed to render and use the digital object; and rights management, recording any binding intellectual property rights that may limit the repository's ability to preserve and disseminate the digital object over time. Preservation metadata addresses all of these issues and more. In short, preservation metadata helps make an archived digital object self-documenting over time, even as the intellectual, economic, legal, and technical environments surrounding the object

are in a constant state of change. The principal challenge in developing a preservation metadata schema is to anticipate what information will actually be needed to support a particular digital preservation activity, and by extension, to meet a particular set of preservation goals. The scope and depth of the preservation metadata required for a given digital preservation activity will vary according to numerous factors, such as the "intensity" of preservation, the length of archival retention, or even the knowledge base of the intended user community. In the context of an information system, where the data is the content of the computer files, metadata about an individual data item would typically include the name of the field and its length. Metadata about a collection of data items, a computer file, might typically include the name of the file, the type of file and the name of the data administrator.

Definitions:

The term was introduced intuitively, without a formal definition. James Martin defined metadata as "Data about data are referred to as metadata", D. C. A. Bultermann has defined metadata like "Metadata is a set of optional structured descriptions that are publicly available to explicitly assist in locating objects." <http://en.wikipedia.org/wiki/Metadata> - cite_note-3#cite_note-3 While defining the metadata Levy, D. M. & Marshall also described the process of metadata handling as "Metadata is the data that describe the structure and workings of an organization's use of information, and which describe the systems it uses to manage that information". American Library Association given definition as "Metadata is structured, encoded data that describe characteristics of information-bearing entities to aid in the identification, discovery, assessment, and management of the described entities."

Preservation of Meta Data:

The OAIS information model implicitly establishes the link between metadata and digital preservation – i.e., preservation metadata. In addition, it provides a high-level overview of the types of information that fall within the scope of preservation metadata, including:

- Representation Information: information necessary to render and understand the bit sequences constituting the archived digital object.
- Preservation Description Information: information that supports and documents the preservation of the archived object, including: Reference information: uniquely identifies the archived object; Context information: describes the archived object's relationship(s) to other archived objects; Provenance information: documents the history of the archived object; Fixity information: validates the authenticity or integrity of the archived object.
- Packaging Information: information that binds all components of an information package into a single logical unit.
- Descriptive Information: information that supports the discovery and retrieval of the archived object by the repository's users.

These information types can be collectively interpreted as the most general description of the metadata needed to support the long-term preservation and use of digital materials. They would serve as the starting point for most subsequent efforts

to develop formal preservation metadata schema. In a digital environment, ensuring that an information object “physically exists” over the long-term is analogous to preserving its bit stream on non-volatile digital storage media. This, however, is only one part of the preservation process. Digital objects are not immutable: therefore, the change history of the object must be maintained over time to ensure its authenticity and integrity. Access technologies for digital objects often become obsolete: therefore, it may be necessary to encapsulate with the object information about the relevant hardware environment, operating system, and rendering software. All of this information, as well as other forms of description and documentation, can be captured in the metadata associated with a digital object.

Preservation metadata is intended to support and facilitate the long-term retention of digital information. The National Library of Australia provides an overview of the types of information which may fall into this category. In particular, preservation metadata may be used to:

- store technical information supporting preservation decisions and actions
- document preservation actions taken, such as migration or emulation policies
- record the effects of preservation strategies
- ensure the authenticity of digital resources over time
- note information about collection management and the management of rights

Need to preserve Metadata:

Digital preservation is an issue that impacts a variety of stakeholders, distributed throughout the academic, commercial, government, and cultural heritage communities, and each confronted with a similar need to develop effective strategies for securing the long-term retention of digital materials. It is probably too much to say that preservation metadata is used in a digital preservation repository setting, yet it is certainly more than the technical information needed to maintain and render digital formats across changing technology cycles. It is not enough to simply preserve a digital object; the means to render and use it must be preserved as well.

1. Preservation of metadata is important because digital objects are technology dependent: The contents of digital objects cannot be accessed “directly” by users; instead, a complex technological environment, consisting of software, hardware, and in some cases network technology, sits between the user and the object’s contents. Rendering and using digital objects requires the availability of this environment, or at least some technically equivalent substitute. For this reason, it is not enough to simply preserve a digital object: the means to render and use it must be preserved as well. This need is amplified in light of the constant pace of technological change, which inevitably makes today’s technologies obsolete. Consequently, it is especially important to carefully document the technological environment of an archived digital object to ensure it remains usable for current and future generations.
2. Digital objects are mutable: Digital objects can be easily altered, either by accident or design, with potentially significant consequences for an object’s look, feel, and

functionality. Beyond this, the relatively short lifespan of many forms of digital storage media raise the specter of “bit rot” – the gradual degradation of stored bits leading to partial or even complete information loss. Even the act of preservation itself can alter the form or function of a digital object – for example, when an object is migrated from one format to another in order to keep pace with changing technologies. For these and other reasons, it is especially important for an archived digital object to be accompanied by metadata documenting its provenance and authenticity – in particular, its salient characteristics at the time of creation, how those characteristics have been altered over time, by whom, and for what purpose. This becomes especially important in domains such as electronic record-keeping, where the evidentiary value of the content must be preserved and validated.

3. Digital objects are bound by intellectual property rights: The relatively brief “shelf life” of digital storage media, along with the rapid obsolescence of contemporary technology, often produces a very short “window of inactivity” during which preservation actions can be safely deferred. This is not to say that non-digital objects are not bound by IPR, but there is an important distinction between the two formats. For non-digital objects – e.g., print materials – preservation actions can often be deferred for a considerable period of time; the process of degradation is slow enough that by the time preservation actions become imperative, the material has either passed into the public domain, or its owners have, for one reason or another, relinquished their rights attached to the object – perhaps because the object has ceased to hold a private economic value. In these circumstances, public agencies are often free to intervene and take whatever actions are necessary to preserve the object over the long-term.

Self documenting:

Preservation metadata is important because it enables a digital object to be self-documenting over time, and therefore positioned for long-term preservation and access, even as ownership, custody, technology, legal restrictions, and even user communities are relentlessly changing.

Types of Meta Data

In the context of digital information objects, Meta data can be assigned in three broad categories:

Descriptive: Facilitating resource discovery and identification

Administrative: Supporting resource management within a collection

Structural: Binding together the components of complex information objects

Of these three categories, descriptive metadata for electronic resources has received the most attention- most notably through the Dublin Core metadata initiative. Although preservation metadata can potentially straddle all three metadata types, its focus lies with the latter two. Therefore, their utility as descriptive metadata is minimal. On the other hand, managing digital objects for the purpose of ensuring their long-term retention would be facilitated by the availability of information such as that represented by the RLG (Research Library Group) elements.

Moreover, digital preservation actions are, for the most part, pre-emptive in

nature, seeking to avert damage rather than to repair it. Once a digital file is corrupted, or the means to access it lost, its contents may be lost forever. In light of these considerations, digital preservation must often take place early in the information life cycle – and while the material is still under copyright. So rather than operating with a free hand, preservation repositories often must work within limitations imposed by currently binding property rights that define acceptable preservation and access policies.

The impact of intellectual property rights on digital preservation can vary across contexts, and be manifested in complex ways – for example, even if the archived content is in the public domain, rights may still be attached to the software needed to render it. For these reasons, it is especially important to document the intellectual property rights associated with an archived digital object, in order that long-term preservation actions can be coordinated with any rights restrictions binding on the object.

There are many other reasons preserve Metadata is an important – indeed an essential – component of most digital preservation strategies. A useful way of summing them all up might be as follows: preservation metadata is important because it enables a digital object to be self-documenting over time, and therefore positioned for long-term preservation and access, even as ownership, custody, technology, legal restrictions, and even user communities are relentlessly changing.

Use of Metadata:

Metadata has many different applications; this section lists some of the most common. Metadata is used to speed up and enrich searching for resources. In general, search queries using metadata can save users from performing more complex filter operations manually. It is now common for web browsers (with the notable exception of Mozilla Firefox), P2P applications and media management software to automatically download and locally cache metadata, to improve the speed at which files can be accessed and searched.

Metadata may also be associated to files manually. This is often the case with documents which are scanned into a document storage repository such as FileNet or Documentum. Once the documents have been converted into an electronic format a user brings the image up in a viewer application, manually reads the document and keys values into an online application to be stored in a metadata repository. Metadata provide additional information to users of the data it describes.

Metadata helps to bridge the semantic gap. By telling a computer how data items are related and how these relations can be evaluated automatically, it becomes possible to process even more complex filter and search operations. For example, if a search engine understands that "Van Gogh" was a "Dutch painter", it can answer a search query on "Dutch painters" with a link to a web page about Vincent Van Gogh, although the exact words "Dutch painters" never occur on that page. This approach, called knowledge representation, is of special interest to the semantic web and artificial intelligence.

Certain metadata is designed to optimize lossy compression. For example, if a video has metadata that allows a computer to tell foreground from background, the

latter can be compressed more aggressively to achieve a higher compression rate.

Some metadata is intended to enable variable content presentation. For example, if a picture has metadata that indicates the most important region — the one where there is a person — an image viewer on a small screen, such as on a mobile phone's, can narrow the picture to that region and thus show the user the most interesting details. A similar kind of metadata is intended to allow blind people to access diagrams and pictures, by converting them for special output devices or reading their description using text-to-speech software.

Other descriptive metadata can be used to automate workflows. For example, if a "smart" software tool knows content and structure of data, it can convert it automatically and pass it to another "smart" tool as input. As a result, users save the many copy-and-paste operations required when analyzing data with "dumb" tools. Metadata is becoming an increasingly important part of electronic discovery. Application and file system metadata derived from electronic documents and files can be important evidence. Recent changes to the Federal Rules of Civil Procedure make metadata routinely discoverable as part of civil litigation. Parties to litigation are required to maintain and produce metadata as part of discovery, and spoliation of metadata can lead to sanctions.

Metadata has become important on the World Wide Web because of the need to find useful information from the mass of information available. Manually-created metadata adds value because it ensures consistency. If a web page about a certain topic contains a word or phrase, then all web pages about that topic should contain that same word or phrase. Metadata also ensures variety, so that if a topic goes by two names each will be used. For example, an article about "sport utility vehicles" would also be tagged "4 wheel drives", "4WDs" and "four wheel drives", as this is how SUVs are known in some countries.

Metadata Standards:

Diverse user communities generate data and information resources and the metadata required to describe these resources are equally diverse. Metadata must adequately describe data in terms useful to user communities and appropriate to the data or information resource. Over time, an array of diverse metadata formats have evolved which enable various organizations, agencies, and user communities to tailor metadata to specific needs. Standardizing these metadata provide uniformity to the information presented, which facilitates information sharing among various organizations and agencies. Several standardized metadata formats exist:

Anglo-American Cataloging Rules (AACR2): A standard by which library materials (such as books, audio recordings, and films) are organized and described. Descriptions of these items typically have headings and /or uniform titles to make the items more accessible in catalog searches. The rules for description are based on the general framework for description of library materials, the General International Standard Bibliographic Description agreed upon between the International Federation of Library Associations and Institutions and the Joint Steering Committee for revision of AACR.

Content Standards for Digital Geospatial Meta data (CSDGM) : Addresses the need to determine common terminology for geospatial metadata and to define the minimum set of metadata elements needed to describe a spatial data resource. It was approved at the June 8, 1994 meeting of the Federal Geographic Data Committee (FGDC), and by Executive Order 12906, "Coordinating Geographic Data Acquisition and Access: The National Spatial Data Infrastructure," which instructs U.S. federal agencies to use the standard to document new geospatial data beginning in 1995. The FGDC developed this standard to help identify sources of spatial data and provide access to data through the emerging National Information Infrastructure.

Directory Interchange Format (DIF): The data structure for directory metadata developed by NASA and maintained by the Interagency Working Group on Data Management for Global Change (IWGDMGC). The format, originally designed to describe satellite and other remotely- sensed data, suggests metadata elements for describing data, prescribes content values for selected elements, and provides a structure for transferring metadata among information systems. These metadata are descriptions which enable a user to make an initial determination of whether or not the data set may contain information of relevance. Government Information Locator Services (GILS): As part of the National Information Infrastructure (NII), GILS provides a framework for individuals and organizations to improve access to their information resources. The U.S. federal government implementation of GILS includes a publicly-accessible catalog of federal information resources each described using a specific metadata format. GILS supplements other government and commercial information dissemination mechanisms, and uses international standards for information search and retrieval so that information can be retrieved in a variety of ways.

Machine-Readable Cataloging (MARC): A metadata standard used by the library community to facilitate exchange of catalog records, which employ the Anglo-American Cataloging Rules to describe a myriad of resources.

Dublin Core: The Dublin Core is a 15-element metadata element set intended to facilitate the discovery of electronic resources. The format has been developed through a series of international workshops attended by librarians, computer specialists and other interested parties. The result is a fifteen-element core metadata set, which can be used for resource discovery and for semantic interoperability between other metadata formats. Information on the history and development of Dublin Core can be found on the DC Web page based at OCLC.

Open Archival Information System (OAIS): The International Organization for Standardization (ISO) is working to develop standards for the long-term preservation of digital information obtained from observations of the terrestrial and space environments and which could also apply to other long-term digital archives. ISO aims to provide a framework and common terminology that may be used by Government and commercial sectors in the request and provision of digital archive services.

Conclusion:

Society's heritage has been presented on many different materials, including stone, vellum, paper and etc. Now a large quantity of information exists in digital forms, including emails, blogs, social networking websites, national elections websites, web photo albums, and sites which change their content over time. Digital materials require constant maintenance and migration to new formats as technology changes. In order to survive into the future, digital objects need preservation metadata that can exist independently from the systems which were used to create them. Without preservation metadata, digital material will be lost.. The aim of the library's preservation program is become fully successful to maintain and preserve items according to their use and their significance of information.

References:

1. Brichford, Marilyn, & William Maher (1995). Archival Issues in Network Electronic Publications. *Library trends*, Vol. 43, pp. 701-712, spring.
2. Butler, Meredith A. (1997). Issue and Challenges of Archiving and storing Digital Information: Preserving the Past for Future Scholars. *Journal of Library Administration*, Vol. 24, (4), pp. 61
3. Cloonan, Miche Valerie (1993). The Preservation: of Knowledge. *Library Trends*, Vol. 41, pp. 594-605.
4. Crawford, Walt (1999). Bits Is Bits: Pitfalls in Digital Reformatting. *American Libraries*, Vol. 30, pp. 47-49.
5. Day, Michael W. (1998). Online Serials: Preservation Issues. *The Serial Librarian*, Vol. 33, (3-4), pp. 199-221.
6. Campbell, Reid. (April 27, 1995). "USGS Gaging Stations Metadata. [online metadata record]. Raleigh, North Carolina: NC Division of Water Resources. www.dwr.ehnr.state.nc.us/metadata/usgsgage.htm#MR
7. Day, Michael. Metadata for Preservation: CEDARS Project Document AIW01. URL: www.ukoln.ac.uk/metadata/cedars/AIW01.html
8. Michael H. Brackett (2006). Data Resource Quality, Addison-Wesley, 2000, <http://en.wikipedia.org/wiki/Special:BookSources/0201713063>
Gladney, H. M. Principles for digital preservation. *Communications of the ACM*, Vol. 49, (2), pp. 111-116.
10. OCLC Beings Electronic Archiving Pilot Project [On Line] (1997). Available: <http://www.oclc.org/>
11. Preservation of the integrity of electronic records [Online]. (2001). Available: <http://www.interpares.org/UBCproject/>

कम्प्यूटराइज्ड बनाम डिजिटल पुस्तकालय : एक परिदृश्य (COMPUTERIZED VERSES DIGITAL LIBRARY: AN OVERVIEW)

***Dr. Krishna Kumar Kesharwani & **Smt. Geeta Kesharwani**

सार (Abstract)

सूचना एवं संचार प्रौद्योगिकी के निरन्तर तीव्र प्रवाह एवं विकास ने मनुष्य के दैनिक जीवन के प्रत्येक क्षेत्र में एक प्रकार की हलचल को पैदा कर आधुनिक समय में उन्नत यंत्रीकरण क्रांति का सूत्रपात किया है। इसका प्रभाव वर्तमान जीवन के प्रत्येक क्षेत्र में कम्प्यूटर के बढ़ते प्रयोग के साथ-साथ पुस्तकालय भी कम्प्यूटर के प्रयोग से अछूते नहीं हैं। कम्प्यूटर एवं यंत्रीकरण संसाधनों का प्रयोग कम्प्यूटराइज्ड बनाम डिजिटल पुस्तकालयों की भूमिका, विकास, प्रभाव, उद्देश्य, लाभ एवं समस्याओं संबंधी आदि ऐतिहासिक विवेचनाओं को इंगित करता है। भारत में तीव्रगति से डिजिटल पुस्तकालयों का बढ़ता प्रचलन पुस्तकालय के भावी उन्नत एवं विकसित स्वरूप का वर्णन करता है।

की-वर्ड : डिजिटल पुस्तकालय, कम्प्यूटर एवं यंत्रीकरण, सूचना एवं संचार प्रौद्योगिकी

प्रस्तावना (Introduction):

आज समूचा विश्व सूचना एवं संचार प्रौद्योगिकी एवं उसका प्रकीर्णन एक क्रान्ति के दौर से गुजर रहा है, क्योंकि समूचे विश्व में प्रकाशित एवं अप्रकाशित सूचना सामग्री में पल प्रति पल तीव्रोत्तर बृद्धि के कारण सूचना का विस्फोट प्रत्येक विषय तथा व्यावसायिक क्षेत्र में हो रहा है। आज कोई भी पुस्तकालय कितना ही विशाल एवं सक्षम होने के बावजूद भी ऐसा नहीं है जो कि मात्र एक विषय यहाँ तक कि एक ही विषय विशेष के क्षेत्र की समस्त प्रकाशित सूचनाओं एवं पाठ्य-सामग्री को क्रय तथा संग्रह करने की सामर्थ्य रखता हो। इसके साथ ही मनुष्य के द्वारा निष्पादित प्राचीन प्रक्रिया के द्वारा वर्तमान समय में जुझारू एवं जागरूक उपयोगकर्ताओं द्वारा चाही गई अभीष्ट सूचना की प्रतिपूर्ति करना भी सम्भव नहीं है। उपर्युक्त कुछ कारणों के आधार पर सूचना के संग्रहण, प्रकीर्णन, पुनःप्राप्ति एवं आदान-प्रदान की तकनीकियाँ पुस्तकालयों में तीव्रगति से वर्तमान समय के साथ बदल रही हैं। अतः बदलते समय के परिवेश में एक पुस्तकालय का दूसरे पुस्तकालयों के सूचना संसाधनों का उपयोग करने के उद्देश्य से अन्य पुस्तकालयों पर निर्भरता आवश्यक हो गई है, जिसे संसाधन सहभागिता (Resource Sharing) के नाम से जाना जाता है। कुछ समय पहले तक संसाधन सहभागिता का विचार पुस्तकालयों के मध्य आपस में केवल पुस्तकों एवं पत्र-पत्रिकाओं को आदान प्रदान करने के लिये तक ही सीमित था, लेकिन अब ऐसा नहीं है। आज पुस्तकालयों में संसाधन सहभागिता नेटवर्किंग व्यवस्था के माध्यम से की जाती है, जिसमें कम्प्यूटरों का बहुलता से प्रयोग किया जा रहा है। पुस्तकालय नेटवर्किंग व्यवस्था में कम्प्यूटर के साथ-साथ दूरसंचार एवं दूरदर्शन तंत्र के उपयुक्त साधनों का भी उपयोग किया जाता है। जिससे नेटवर्किंग व्यवस्था के माध्यम से संसाधन सहभागिता दूसरे पुस्तकालयों के उपयोगकर्ताओं को कम से कम समय एवं लागत में अधिक से अधिक सूचना संसाधन उपलब्ध करा सके। इसीलिये पुस्तकालयों के मध्य सूचना नेटवर्किंग की व्यवस्था की भूमिका बहुत ही अधिक महत्वपूर्ण हो गई।

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भूमिका (Role) :

सूचना एवं संचार प्रौद्योगिकी के द्वारा सूचना नेटवर्किंग व्यवस्था के संसाधनों की प्राप्ति में डिजिटल पुस्तकालयों की बहुत ही महत्वपूर्ण भूमिका है। यह व्यवस्था विश्व स्तर पर उपलब्ध है। डिजिटल पुस्तकालयों का प्रमुख उद्देश्य यह है कि वह उपयोगकर्ताओं द्वारा चाही गई अभीष्ट सूचना की प्रतिपूर्ति उसके मूल्यवान समय को दृष्टिगत रखते हुये कम से कम समय में उसे सुगमता एवं शीघ्रता से उपलब्ध करा सकें। आज परम्परागत पुस्तकालय तीव्र गति से डिजिटल पुस्तकालयों के रूप में परिवर्तित हो रहे हैं, जिनका प्रमुख केन्द्र बिन्दु सूचना एवं संचार प्रौद्योगिकी के अनुप्रयोग जैसे – इन्टरनेट, वेबसाइट, काम्पेक्ट डिस्क, नेटवर्क एवं मल्टीमीडिया आदि संसाधन हैं। जिस प्रकार प्राचीन समय के पुस्तकालयों में कागज और छपाई विहीन सूचना सामग्री पेड़ों की छाल एवं ताम्र पत्र आदि पर अंकित होती थी उसी प्रकार आज आधुनिक पुस्तकालय अब पुनः कागज विहीन पुस्तकालय के रूप में परिवर्तित हो रहे हैं, जिन्हें डिजिटल पुस्तकालय कहते हैं।

सूचना नेटवर्किंग व्यवस्था का महत्वपूर्ण कार्य संसाधन सहभागिता के मध्य अनेक पुस्तकालयों द्वारा सूचना का प्रभावी उपयोग सुनिश्चित करने के लिये नये मार्गों को खोजने की दिशा प्रदान करना है, जिसके लिये वर्ल्ड वाइड वेब (World Wide Web = www) एक ऐसा सामान्य साधन है जिसके द्वारा सूचना की खोज व प्रचार प्रसार किया जाता है। इस व्यवस्था के संचालन में किसी पुस्तकालय के ग्रन्थालयी को आवश्यक रूप से नई-नई तकनीकियों जैसे इन्टरनेट, डिजिटल सूचना तंत्र, डीवीडी, सीडीरोम आदि का प्रयोग सीखना चाहिये, क्योंकि पुस्तकालयों में आजकल इन्टरनेट का उपयोग दिनों दिन तीव्र गति से बढ़ रहा है।

उद्भव एवं विकास (Origin and Development) :

सन् 1960 के प्रारम्भ में अमेरिका एवं ग्रेट ब्रिटेन के अनेकों पुस्तकालयों में कम्प्यूटर का प्रयोग प्रारम्भ हो गया था। अमेरिका में कम्प्यूटर के प्रयोग का कार्य मुख्यतः वहाँ के विशिष्ट एवं विश्वविद्यालय पुस्तकालयों तक ही सीमित था। डिजिटल पुस्तकालय का विकास लगभग 30 वर्ष पुराना है। सन् 1967 में संयुक्त राज्य अमेरिका के वायुसेना विभाग ने अपने कानूनी प्रलेखों का सम्पूर्ण डिजिटलाइजेशन कर वैज्ञानिक संचार प्रारम्भ किया था। सन् 1970 के दशक में कम्प्यूटर संचार नेटवर्क का उदय हुआ, जिसमें कुछ साफ्टवेयर पैकेजों के द्वारा सूचना संग्रहण एवं अनुक्रमणीकरण का कार्य प्रारम्भ किया गया। पुस्तकालयों में पहले कम्प्यूटरों का प्रयोग उसकी चारदीवारी तक ही सीमित था, लेकिन अब कम्प्यूटर के साथ-साथ दूरसंचार नेटवर्क ने पुस्तकालय के कार्यों की रूपरेखा को पूर्णतः परिवर्तित कर दिया है। जिसमें संसाधनों की सहभागिता के उद्देश्य से पुस्तकालयों ने विशिष्ट भौगोलिक क्षेत्र के लिये नेटवर्किंग के प्रयोग की शुरुआत की। सन् 1980 के अन्त में कम्प्यूटर एवं नेटवर्क के विकास से सूचना प्राप्ति व संग्रहण का कार्य सुगमता से सम्भव हुआ। इसी समय अमेरिका एवं यूरोप के पुस्तकालयों में कुछ ऑन लाइन सेवाओं को प्रारम्भ किया गया जिसके लिये ऑन लाइन कम्प्यूटर लाइब्रेरी सेन्टर नामक प्रोजेक्ट पूर्व ओहियो कॉलेज लाइब्रेरी सेन्टर (OCLC) द्वारा निर्मित किया गया, जिसमें इस सेवा के द्वारा सामयिक प्रकाशनों को प्रकाशित करने का कार्य प्रारम्भ किया गया। सन् 1980 के मध्य में माइक्रो कम्प्यूटर से संबंधित नई पद्धतियों का विकास हुआ। सीडीरोम (Computer Disk Read Only Memory = CD ROM) इसी परिक्षेत्र का उत्पादन है। इसके पश्चात सीडीरोम द्वारा अधिक मात्रा में सूचना तथ्य संग्रहित किये जाने लगे। वास्तविक डिजिटल युग सन् 1980-1990 के मध्य ही विकसित हुआ। वर्तमान समय में डिजिटल पुस्तकालयों का महत्व एवं प्रभाव इसलिये बढ़ता जा रहा है कि ये कम से कम समय में अधिक से अधिक सूचना तथ्यों को सुगमता एवं शीघ्रता से कम्प्यूटर द्वारा संग्रहित एवं सम्प्रेषित करने में समर्थ होते हैं। जिसमें सामयिक प्रकाशनों की पूर्ण पठनीय सामग्री ऑन लाइन पर उपलब्ध कराई गई है तथा डिजिटल पुस्तकालय के निर्माण में कैमरों एवं स्कैनर आदि का उपयोग भी होने लगा है।

परिभाषा (Definition):

1. **डिजिटल लाइब्रेरी फाउन्डेशन एवं वाटर्स के अनुसार:**— डिजिटल पुस्तकालय ऐसी संस्थाएँ हैं जो ऐसे संसाधनों को उपलब्ध कराती हैं जिसमें विशिष्ट कर्मियों द्वारा इलेक्ट्रानिक संसाधनों का चयन, वितरण एवं परिरक्षण सम्मिलित है, जो किसी निश्चित समूह के लिये तैयार कर उन्हें उपलब्ध कराये जाते हैं। अर्थात् यह एक तत्व न होकर सूचनाओं का डिजिटल समूह है।
2. **फिलिप बेकर के अनुसार:**— डिजिटल पुस्तकालय एक नवीन प्रकार के पुस्तकालय हैं जिनमें सूचना संग्रहण केवल डिजिटल या इलेक्ट्रानिक स्वरूप में होते हैं तथा इनमें परम्परागत ग्रंथों को शामिल नहीं किया जाता है।

डिजिटल पुस्तकालय के आवश्यक तत्व (Essential Elements of Digital Library):

डिजिटल पुस्तकालयों की आवश्यकता सूचना के तीव्रोत्तर विस्फोट के कारण दिनों दिन बढ़ती जा रही है। जिसकी उपयोगिता निम्नांकित महत्वपूर्ण एवं आवश्यक तत्वों के बिना सम्भव नहीं है :

1. उचित मात्रा में कम्प्यूटर
2. सर्वर
3. नेटवर्क एवं संचार माध्यम
4. इन्टरनेट/वर्ल्ड वाइड वेब
5. लोकल एरिया नेटवर्क
6. प्रिन्टर
7. स्कैनर एवं स्कैनिंग साफ्टवेयर
8. रखरखाव एवं संग्रहण संबंधी साफ्टवेयर
9. प्रशिक्षित पुस्तकालय कर्मचारी
10. पर्याप्त स्थान एवं अन्य उपकरण

डिजिटल पुस्तकालय के उद्देश्य (Objectives of Digital Library):

डिजिटल पुस्तकालयों के निम्नांकित उद्देश्य हैं :-

1. उपयोक्तृओं तथा पुस्तकालय के कर्मचारियों के समय की बचत करना एवं शिक्षा तथा अध्ययन पद्धति को उन्नत करना
2. शोध कार्यों के परिणाम तथा निष्कर्षों से संबंधित सूचनाएँ वैज्ञानिकों व शोधार्थियों तक पहुँचाने की व्यवस्था करना एवं सूचना संचार प्रौद्योगिकी के क्षेत्र में अनुसंधान एवं विकास को प्रोत्साहन देना
3. इलेक्ट्रानिक ग्रंथ, पत्रिकाओं की व्यवस्था एवं सूचना की माँग को पूरा करने में सहायता प्रदान करना
4. प्रकाशन तथा पुस्तकालय तक पहुँचने के समय को कम करना
5. पुस्तकालय कर्मचारियों एवं उपयोक्तृओं को नई तकनीकियों से अवगत कराना तथा तकनीकियों से प्रशिक्षित कराने के लिये समय-समय पर प्रशिक्षण सुविधायें प्रदान करना
6. उपयोक्तृओं के उपयोग के लिये सूचना के विनिमय हेतु क्षेत्रीय, राष्ट्रीय व अंतर्राष्ट्रीय स्तर पर नेटवर्किंग समन्वय स्थापित कर पुस्तकालयों में उपयोक्तृओं एवं सूचना के मध्य उपयोग के लिये कम्प्यूटरीकृत नेटवर्किंग व्यवस्था के द्वारा संसाधन सहभागिता को प्रोत्साहन देना
7. ऑनलाइन सूचना सेवा प्रदान करने के लिये परियोजनाओं, विशेषज्ञों एवं संस्थाओं के डेटाबेस निर्मित करना

8. सूचना सामग्री के सूचीकरण एवं प्रसूची उत्पादन में सदस्य पुस्तकालयों की सहायता करना तथा पुस्तकालयों की सूचना क्षमता को विकसित करना
9. पुस्तकालयों में सूचना के त्वरित सम्प्रेषण हेतु कम्प्यूटरीकृत क्रियाओं एवं इलेक्ट्रानिक सेवाओं को बढ़ावा देना
10. पुस्तकों के आदान प्रदान एवं निधानियों में खोज की सुविधा को इलेक्ट्रानिक उपकरणों तथा मशीन द्वारा सुलभ करने की व्यवस्था करना
11. पुस्तकों, सामयिकियों, अपुस्तकीय सामग्रियों तथा सूची के उत्पादन में सदस्य पुस्तकालयों की सहायता करना आदि

पुस्तकालय कर्मियों की भूमिका (Role of Library Staff):

किसी भी डिजिटल पुस्तकालय की गुणवत्ता एवं महत्ता उस पुस्तकालय के कर्मियों की दक्षता, योग्यता एवं कार्य कुशलता पर निर्भर होती है। अतः यह तभी सम्भव है जब उस पुस्तकालय के कर्मी डिजिटल वातावरण में पूर्ण रूप से दक्ष एवं योग्य होंगे, तब कहीं किसी भी उपयोगकर्ता एवं शोधकर्ता को उसकी अभीष्ट वांछित जानकारी डिजिटल माध्यम से खोज कर कम से कम समय में उसकी आवश्यकताओं की पूर्ति कराने में सक्षम होंगे। आज का ग्रंथालयी किसी भी पुस्तकालय का एक आधुनिक घटक है, जो अब आधुनिकता के बदलते परिवेश में नई तकनीकियों का ज्ञान प्राप्त कर डिजिटल संसाधनों के द्वारा उपयोगकर्ताओं को उसकी अभीष्ट व वांछित सूचनायें प्रदान कर लाभान्वित कर सकता है। इसलिये बदलते समय के परिवेश के साथ-साथ ग्रंथालयी एवं पुस्तकालय के अन्य सहकर्मियों को भी डिजिटल पुस्तकालय संबंधी प्रायोगिक प्रशिक्षण एवं अनुभव नितांत आवश्यक है।

निष्कर्ष (Conclusion):

उपरोक्त विवरण के निष्कर्ष से हम यह कह सकते हैं कि किसी भी डिजिटल पुस्तकालय के सूचना नेटवर्किंग की आधारशिला दो से अधिक पुस्तकालय एक दूसरे के सूचना संसाधनों का उपयोग करने के लिये तथा इन संस्थाओं से सूचना की सहभागिता के उपयोग के लिये आपस में मिल जुलकर कार्य करने की एक महत्वपूर्ण व्यवस्था है। पुस्तकालयों के मध्य इस व्यवस्था को स्थापित करने के लिये प्रत्येक सहभागी पुस्तकालय के पास कम्प्यूटर तथा दूरसंचार के साधनों की सुविधाओं का होना भी अत्यन्त आवश्यक है। यह व्यवस्था सूचना का आपस में विनिमय करने के उद्देश्य से अपनाई जाती है, जिससे पुस्तकालयों का उपयोक्ता सभी पुस्तकालयों के संसाधनों का पर्याप्त उपयोग कर सके। तभी यह कहा जा सकता है कि डिजिटल पुस्तकालय के रूप में एक क्रान्तिकारी युग का सूत्रपात हुआ है।

संदर्भ सूची (References):

1. Marchionini, G. (1999). Overview of Digital Libraries; School of Library and Information Science, University of North Carolina. Retrieved online at http://www.ils.unc.edu/-march/overview_slides/index.htm.
2. Waters, D. J. (1998). What are Digital Libraries ? *CLIR Issues*, No. 4, July/August.
3. Baker, Philip (1994). Electronic Libraries: Vision of Future. *The Electronic Library*, Vol. 12, (4), pp. 221-29.
4. Krishan Gopal (2005). Digital Libraries in Electronic Information Era. New Delhi: Authors Press.
5. Arora, J. (2003). Building Digital Libraries: An overview. INFLIBNET Courseware, Ahmedabad, INFLIBNET Centre, IUC of UGC.

6. Ojha, D.C. (2005). Digital Libraries: Myths and challenges. **In** Ojha (D.C.) and Kothari (D.V.), Ed. *Advances in Library and Information Science: Digital Library*. Jodhpur, Scientific Publishers.
7. Tilwani, T. D. (2005). Digital Library: Value and Vision. *RLA Bulletin*, Vol. 1-4, Jan.-Dec.
8. Drake, Miriam A. (Ed.) (2003). *Encyclopedia of Library and Information Science*. 2nd edition. New York, Marcel Dekker, Vol. 2.
9. तिलवानी, टी. डी. एवं शर्मा, अरविन्द (2006). डिजिटल ग्रंथालय – एक नवीन युग. ग्रंथालय विज्ञान, खण्ड 3, (1-2).
10. सत्यनारायण, एन.आर. (1995). पुस्तकालय कम्प्यूटरीकरण – निर्देश पुस्तिका. नई दिल्ली, विश्व प्रकाशन.

SUBJECT SEARCHING IN OPACS: AN EVALUATION

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Abstract

The article explains the concept of OPACs and subject searching in general. Subject searching in the OPAC system requires the knowledge of the subject fields that were used in the system's vocabulary. These subject fields or descriptors, in a bibliographic record, are selected from a list of subject heading, thesaurus, or classification scheme. Problems associated with subject searching in OPAC systems are highlighted and solutions that have been proposed over the years to tackle these problems are also discussed.

Keywords: Subject Searching, OPAC.

1. Introduction:

Like traditional card catalogue, an Online Public Access Catalogue (OPAC) is a catalogue, and as such should try to meet certain objectives in order to serve its users. Since these objectives were formulated, the technology to achieve them has changed several times, from book catalogue, to card catalogue, to online catalogue. While the means to achieve the objectives have changed, the objectives themselves have not.

Let us consider for a moment the objectives (or 'objects') of a library catalogue as defined by Cutter [1] over a century ago.

The catalogue should:

- i. Enable a person to find a book of which either the author, the title or the subject is known.
- ii. Show what the library has by a given kind of literature.
- iii. Assist in the choice of book as to its edition (bibliographically) or as to its character (literary).

Although it can be argued whether or not these objectives should be updated for an OPAC, they do provide a concise statement of what is that most online catalogues seek to accomplish, and emphasize the various approaches of the individual user that may be made to the catalogue of a library for the access to its collection. Of the various approaches, subject approach (access) has long been engaging the attention of library professionals, perhaps as long as libraries themselves. It may be recalled that the catalogue developed by Callimachus ¹(305 BC–240 BC) for the library of Alexandria basically served subject access to its collection [2].

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OPAC is a computer system that is used to search a bibliographic database containing records of items (books, journals, video cassettes, etc.). According to Hildreth [3] OPACs have gone through three stages of development (i.e. First generation, second generation and third generation OPACs) with their improving features, but the basic contention remains their accessibility by library clientele without any formal training..

2 Subject searching on OPAC:

O'Brien [4] says that 'subject access is the most problematic area of online catalogues'. It often leads either to failure or the retrieval of too many references. Searching the OPACs has been characterized as being of two types:

- i. Specific item searching (or Known item searching), where the user is trying to locate a particular item that the user knows of (i.e., the user is searching for a specific record).
- ii. Subject searching, where the user wants to retrieve any item on a particular topic.

The distinction between these two types of searching is fuzzy. A search often involves both type of searching. What begins as a specific item search often ends up as a subject search, especially if the specific item search fails to locate the item? According to Poo [5] both types of searching have their particular features and limitations.

Subject searching is an important mechanism for establishing relationship between documents in a collection. It helps user to find works that are related each other because they are either on same subject or related subjects. Hancock [6] found from the study that 72% searches essentially deal with subject access. However, Hirst [7] founds that OPAC searches were mainly conducted for specific items and that most were successful. It may be noted that most specific item searches are not subject searches. Interestingly, novice users tend to achieve higher success rates than expert users

2.1 Knowledge needed for subject searching

Subject searching in an online catalogue requires the translation of user's information needs into the terms, which have been used in the system's vocabulary as subject descriptors. They are then put in some specific statements or in the command language of the online catalogue, matched system's vocabulary retrieve the items to be delivered to the users. During the process not all subject searches are one hundred percent successful. Effective subject search requires the following kinds of knowledge.

- i. Knowledge of the fields that can be used for subject searching and their characteristics.

- ii. Knowledge of the thesaurus system from which subject descriptors are selected by indexers.
- iii. Knowledge of the search capabilities provided by the online catalogue and how to use them.
- iv. Knowledge of the search strategies and when and how to apply them.

2.1 Subject Descriptors in Bibliographic records

Fields in the bibliographic items that contain subject information are as follows:

- i. Subject fields
- ii. Title fields
- iii. Class number fields.

Each subject field contains a subject descriptor (or subject heading) selected from the Library of Congress Subject Headings (LCSHs) or from some thesaurus (e.g., the National Library of Medicine's Medical Subject Headings). A subject descriptor comprises a main descriptor and optionally a number of modifiers called subheadings or subdivisions. To know what descriptor and modifiers to use to search the subject field, the user has to consult LCSHs or thesaurus, which may be searchable online or available to the users only in printed form.

3 Users and Subject searching on OPAC:

Users of OPACs are very heterogeneous; varying widely in background, age, subject interests, computer and library literacy, and many other aspects. It was found from the studies that users have difficulty when performing subject searches. One simple reason for subject searching being difficult is that libraries want to serve an approach of which not even the user himself is sure. Though online catalogue promised to minimize some of the problems, but any deficiency during the process may give rise to poor results. The studies regarding subject searching emphasize the following problems, which were experienced by the users.

- i. Users have problems when matching their terms (information queries) with those used in the system.
- ii. They have problems in identification of terms that are broader or narrower than their topic of interests.
- iii. Users have little knowledge of LCSHs and often fail in subject searching due to their lack of knowledge.
- iv. They have unable to increase the search results when too little or nothing is retrieved

- v. They don't know the techniques to reduce search results when too much is retrieved.
- vi. Users don't know how to use Boolean operators (AND, OR, NOT) and truncation and how to limit keyword searches to specific field. They often have problems with the mechanical and conceptual aspect of query formulation including misspelling and more sophisticated capabilities of an OPAC system.

The result of these problems is sometimes in 'no retrieval' or 'too many records', so that the users will be discouraged to proceed further. In either case, the user suffers. Larson [8] named these two problems 'search failure' and 'information overload' respectively.

3.1 Search failure

A search failure, generally deemed to be a search that retrieves nothing, is not always that obvious, if the retrieved items do not best serve the users needs, the search will be no better than search failure. A successful search, according to Husain [9], depends upon the perfect coordination between the user and the system. Any major deficiency of the part of either of the two, results in search failure. It was observed that user's lack of knowledge of LCSHs, misspelling, mistyping and Boolean "AND" operator account for only a few cause of search failure. According to Borgman [10] mechanical problems (i.e., syntax and semantics of entering search and moving through the system) and conceptual problems (i.e., choice of access points, how to narrow or broader a search, etc.) are only two reasons of search failure.

3.2 Information overload

Information overload refers to the phenomenon of retrieval of too many references in response to a subject search so that a user actually gets bewildered and frustrated and may choose not to go further [11]. As the data base of an OPAC grows, increasing number of bibliographic records will match a user's subject search. When the system is keyword based, the rate of increase is more rapid than in those relying on exact matching of LCSHs. Use of system features, such as truncation and Boolean "OR" operator, also increase the number of items that match a given search.

It is obvious to think that what is the point, where user will satisfy with retrieved items. Blair [12] calls it user's 'futility point'. There can be no precise definition of what constitutes 'too much' or 'too little'. The dividing line between acceptable retrieval and information overload depends on the individual user's needs and tolerance for scanning through screens of retrieved items. However, Wiberly and Daugherty [13] suggest, from examination of the literature of online catalogue use, that most users are 'satisfied' by looking at less than 35 retrieved items.

4 Improving the design of OPACs

Numerous studies have been undertaken to overcome the above problems. The following improvements are discernable.

4.1 Use of knowledge-based and Natural Language Processing for Query formulation

Knowledge-based processing can be used to help the user to select appropriate terms to search and to formulate an appropriate search query in the search language used by the system. Such a knowledge-based interface needs to have the subject knowledge and knowledge of the search language of the system. Such a system will need to handle query negotiation (i.e., interact with the user in the way that a librarian might to find the best terms to represent a user's need). Paice[14] described that an online thesaurus (such as online LCSHs) can provide some subject knowledge that can be used by an interface to map the users' terms to the control descriptors and keywords to use in the search. If the interface includes some degree of natural language processing, that will allow the users to express their information need in natural language.

Knowledge-based processing need not to be limited to selecting search terms from the thesaurus, but can be used in the task of selecting and executing an initial search strategy and reformulation strategies after relevance feedback.

4.2 Providing an enhanced Thesaurus System

An enhanced thesaurus system would be useful for an end user to find an appropriate controlled vocabulary that could describe topics of interest with the controlled vocabulary used in the system. This can be accomplished by designing the OPAC for the user to browse a subject term as well as for the cataloguer to select subject descriptor from the semantic network consisting of a thesaurus enhanced by a network of association. Paice pointed out that an enhanced thesaurus increase the chances of the user's terms matching one or more terms in the thesaurus and allows the users to explore a rich network of links and associations.

4.3 Developing Non-Boolean "Best match" Search Capabilities

Numerous studies on subject searching to OPAC have pointed out a "best match" approach, in which items containing some or all of user's terms are retrieved and then displayed in ranked sequence; with the records that most closely match the user's query being shown first.

The well known system that use this approach is CITE, a front end to the National Library of Medicine's Online Catalogue CATLINE [16]. CITE stems keywords from the user query and identifies word variants of these keywords. It then assigns weights to these terms based inversely on the document frequencies of these

terms. The higher a search term's frequency, the lower its weight. The user is allowed to override the automatically derived weights by ranking the terms. The weights of the terms occurring in each retrieved record are summed, and the records are ranked.

4.4 Proving an Automated Sequence of Search Strategies

An OPAC can use automated search algorithms to formulate the user's search query and refine the search criteria/results. Search algorithms can also be used to perform relevance feedback searches. The user can indicate which of the retrieved record is relevant, and an automated search routine can then retrieve more records that are similar to the relevant records already retrieved.

4.5 Design more user-friendly Interfaces

A use interface is primarily concerned with the interchange of information between searcher and the system. A well designed and user friendly interface can display help messages to users on how to proceed if they are in difficulty. When there are no or few retrievals, the system may suggest shortening phrase or word, substituting synonyms or more general terms for the initial search words, or retrying the search using a different search method. When too many records are retrieval, the system can ask the user to enter additional search words or enter limiting criteria to narrow the search the system can also prompt the user to try different search and display options that the user may not be aware of. These messages could tell the user what to do, who to do it, and why it may improve the results [17]

4.6 Extending Bibliographic records with more subject information

A bibliographic item can be extending with more subject information in the following ways:

- i. Table of content of the item may be entered in the record with keyword searching.
- ii. Selected terms from the back of book index of the item can be entered in the record and allowed keyword searching of these items.
- iii. More subject descriptors may be assigned to each item.
- iv. Terms in the classification schedule and its indexes that correspond to the classification number assigned, should be enter in the record and allow key word searching to these items.

Extending bibliographic records in the above ways will increase the possibility of retrieving relevant records and reduce the number of searches that retrieve no records. It will also allow the user to use more specific term in search rather than the possibility broader subject descriptor used in the subject fields.

4.7 Use of Classification system

Classification numbers (or class numbers) contain subject information, and searching by class number is an alternative way of subject searching, to searching the title and subject fields. Many online systems are using DDC number as a medium to link user with bibliographic records as well as full text. In the context of digital libraries, however, Lesk [18] questions the very need for traditional subject classification and indexing (which are usually meant for a possible future query) when the actual query itself can be searched on demand in seconds. Multistage searching and display, saving searches, set buildings, etc., are considered as not required any more in Web and future digital libraries. However, class number search is seldom used by users, and in fact, the field is not even searchable in some online catalogues. Class number search is difficult because it requires the user to have some knowledge of the classification system and its notational structure, to look up a classification schedule for the appropriate class number for the subject of interest, and to know how to use truncation to remove book numbers, dates, and copy-level information.

4.8 Build an Expert System to Front end Interfaces

An expert system is a computer system that has the knowledge of experts in its knowledge base, usually in the form of rules, and is capable of mimicking the behaviors of an expert. An expert system that embodies within it the knowledge and skills of a librarian or 'search intermediary' for carrying out online searches in bibliographic or textual databases has also been known as an expert intermediary system or an expert retrieval assistance system. The expert intermediary system is concerned with direct access to information. Its expertise is centered on the techniques for retrieving references to documents rather than actually deducing and providing facts. Expert system has the potential to tackle the subject searching problems in OPACs. This was accomplished by means of a sophisticated user interface that indicates a windowing process to build a user profile and negotiate an appropriate search strategy. Such systems are capable of increasing precision significantly without sacrificing recall.

5. Conclusion:

The problems with subject searching to library collections have been with us, virtually as long as libraries themselves. Sridhar [19] found in his study that moving from a traditional card catalogue to a modern OPAC has not made subject searching more attractive or effective. The largest union catalog is WorldCat, which includes the holdings of over 10,000 libraries worldwide [20]. The emphasis in this article was given to synthesize various research findings and to evaluate the variety of proposed solutions to the subject searching problems in OPACs. So far the focus has been on the identification of problems at the designing and searching stages, but the future attempts appeared to be aimed at developing more user friendly interfaces and knowledge-based and natural language processing system for query formulation, wherein user's obligations regarding search strategy, search logic, knowledge of end-

user thesaurus, etc. will continue to be minimized and searcher-system interface will be maximized to achieve what is known as 'precision' without sacrificing recall.

References:

1. Cutter, C.A. (1904). Rules for a Dictionary Catalogue. 4th ed. U.S. Govt. Printing Off., Washington, p. 10.
2. Witty, F.J. (1973). The Beginning of Indexing and Abstracting: some Notes towards a History of Indexing and Abstracting in Antiquity and the middle Ages. *Indexer*. Vol. 8, (4), pp.193-195.
3. Hildreth, C.R. (1984). Pursuing the Ideal: Generations of Online Catalogues. In: Aveny, B., Butler, B. (Eds): Online Catalogues, Online reference, converging trends. Chicago, American Library Association.
4. O'Brien, A. (1994). Online catalogs: enhancements and developments. In: Williams, M. E. (Eds): *Annual Review of Information Science and Technology*, Learned Information, Medford, NJ, Vol. 29, pp.219-42.
5. Poo, Danny C.C. and Christopher, Khoo (1960). Subject Searching in Online Catalogue Systems. *Encyclopaedia of Library and Information Science*. No. 60. Marcel Dekker, New York. p. 325.
6. Hancock, M. (1987). Subject Searching behaviour at the Library Catalogue and at the Shelves: Implication for Online Interactive Catalogues. *J. Documentation*. Vol. 43, (4), pp. 303-321.
7. Hirst, S. J. (1998). Hyperlib Deliverable 1.2: In-depth Survey of OPAC Usage. Part of Hyperlib Electronic Document Store. University of Antwerp, Antwerp and University of Loughborough, Loughborough, available at: www.lia.ua.ac.be/MAN/P12/root.html.
8. Larson, R.R. (1992). Evaluation of Advanced Retrieval Techniques in an experimental online catalogues. *JASIS*. Vol. 43, (1), pp. 34-53.
9. Husain, S. and O'Brien, A. (1992). Recent Trends in Subject Access to OPACs: An Evaluation. *Int. Classification*. Vol. 19, (3), pp. 140-145.
10. Borgman, C. L. (). Why are Online Catalogues Hard to use? Lessons Learned from Information Retrieval Studies. *JASIS*. 37, pp. 387-400.
11. Husain, S. and O'Brien, A. (1987) : Ibid. P 142-143.
12. Blair, D. C. (1980). Searching Biases in Large Interactive Document Retrieval Systems. *JASIS*. 31, pp. 271-277.

13. Wiberly, S.E. and Daugherty, R.A. (1988). User's Persistence in Scanning Lists of References. *College and Research Libraries*. Vol. 49, (2), pp. 149-156.
14. Blair, D.C. (1980). Searching Biases in Large Interactive Document Retrieval Systems. *JASIS*. 31, pp. 271-277.
15. Paice, C. (1986). Expert System for Information Retrieval? *Aslib Proceedings*. Vol. 3, (10), pp. 343-353.
16. Bates, M. J. (1986). Subject Access in Online Catalogues: A Design Model. *JASIS*. Vol. 37, (6), pp. 357-376.
17. Hildreth, C. (1987). Beyond Boolean: Designing the Next Generation of Online Catalogues. *Library Trends*. Vol. 35, (4), pp. 647-667.
18. Lesk, M. (2003). Collecting for a digital library: size does matter. *Information Management and Technology*. Vol. 36, (4), pp. 184-7.
19. Sridhar, M. S. (2004). Subject searching in the OPAC of a special library: problems and issues. *OCLC systems & Services* . Vol. 20, (4), pp. 183-191.
20. Antelman, K., Lynema, E., & Pace, A.K. (2006). Toward a Twenty-First Century Library Catalog. *Information Technology & Libraries*. Vol. 25, (3), pp. 128-139.

Implementation of S.R. Ranganathan's Laws to the World Wide Web

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Abstract

This paper analyzes the Internet resources and raises an important question: "Does the Web save the time of the users?" This question is analyzed in the context of Five Laws of the WWW. What do these laws mean? The laws are meant to be elemental, to convey a deep understanding and capture the essential meaning of the World Wide Web. These laws may seem simplistic, but in fact they express a simple, crystal-clear vision of what the Web ought to be. Moreover, we intend to echo the simplicity of Ranganathan's Five Laws of Library Science which inspired them.

Keywords : World Wide Web, Ranganathan's laws, Five Laws of Library Science

Introduction

The World Wide Web [WWW] is a Worldwide Internet system that distributes graphical, hyperlinked information, based on the hypertext transfer protocol (http). The Web is the global hypertext system providing access to documents written in a script called Hypertext Markup Language (HTML) that allows its contents to be interlinked, locally and remotely. The Web was designed in 1989 by **Tim Berners-Lee** at the European Organization for Nuclear Research (CERN) in Geneva.

We live in exciting times. The WWW, whose history spans a mere dozen years, will surely figure amongst the most influential and important technologies of this new century. The information revolution not only supplies the technological horsepower that drives the Web, but fuels an unprecedented demand for storing, organizing, disseminating, and accessing information. If information is the currency of the knowledge-based economy, the Web will be the bank where it is invested. It is a very powerful added value of the Web that users can access resources online electronically, that for whatever reason are not in the traditional paper-based collections. The Web provides materials and makes them online accessible, so they can be used. This is the real difference between the Web and libraries. Therefore, webmasters build web collections not for vanity but for use.

The Web is interested in its cybercitizens (users) using its resources for all sorts of reasons: education, creative recreation, social justice, democratic freedoms, improvement of the economy and business, support for literacy, life long learning, cultural enrichment, etc. The outcome of this use is the betterment of the individual and the community in which we live -the social, cultural, economic and environmental well being of our world. So the Web must recognize and meet the information needs of the users, and provide broad-based services.

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The Five Laws of Library Science

Shiyali Ramamrita Ranganathan (1892-1972) was considered the father of Library Science in India. He developed what has been widely accepted as the definitive statement of ideal library service. His *Five Laws of Library Science* (1931) is a classic of library science literature, as fresh today as it was in 1931. These brief statements remain as valid -in substance if not in expression- today as when they were promulgated, concisely representing the ideal service and organizational philosophy of most libraries today:

1. *Books are for use.*
2. *Every reader his or her book.*
3. *Every book its reader.*
4. *Save the time of the reader.*
5. *The Library is a growing organism.*

Although these statements might seem self-evident today, they certainly were not to librarians in the early part of the 20th century. The democratic library tradition we currently enjoy had arisen in America and England only in the latter part of the nineteenth century (Sayers, 1957). For Ranganathan and his followers, the five laws were a first step toward putting library work on a scientific basis, providing general principles from which all library practices could be deduced.

In 1992, James R. Rettig posited a Sixth Law, an extension of Ranganathan's laws. He conceived that Sixth Law "*Every reader his freedom*" as applicable only to the type of service (i.e., instruction or provision of information).

New information and communication technologies suggest that the scope of Ranganathan's laws may appropriately be extended to the Web. Nowadays the same five laws are discussed and reused in many different contexts. Since 1992, the 100th anniversary of Ranganathan's birth, several modern scholars of library science have attempted to update his five laws, or they reworded them for other purposes.

'**Book, reader, and library**' are the basic elements of Ranganathan's laws. Even if we replace these keywords with other elements, Ranganathan's laws still work very well. Based on Ranganathan's laws, several researchers have presented different principles and laws. For instance:

"Five new laws of librarianship" by Michael Gorman (1995);
"Principles of distance education" by Sanjaya Mishra (1998);
"Five laws of the software library" by Mentor Cana (2003);
"Five laws of children's librarianship" by Virginia A. Walter (2004);
"Five laws of web connectivity" by Lennart Björneborn (2004); and
"Five laws of diversity/affirmative action" by Tracie D. Hall (2004).

Gorman's laws are the most famous. He has reinterpreted Ranganathan's laws in the context of today's library and its likely future. Michael Gorman has given us his five new laws of librarianship:

1. *Libraries serve humanity.*
2. *Respect all forms by which knowledge is communicated.*
3. *Use technology intelligently to enhance service.*
4. *Protect free access to knowledge; and*
5. *Honor the past and create the future* (Crawford & Gorman, 1995).

Gorman (1998a,b) believes that S. R. Ranganathan invented the term 'Library Science' and beautifully demonstrates how his laws are applicable to the future issues and challenges that librarians will face. Gorman's laws are not a revision of Ranganathan's laws, but another completely separate set, from the point of view of a librarian practicing in a technological society (Middleton, 1999).

Furthermore, based on Ranganathan's laws, **Jim Thompson** in protesting against a library services, revised Ranganathan's laws to the following statements:

1. *Books are for profit.*
2. *Every reader his bill.*
3. *Every copy its bill.*
4. *Take the cash of the reader.*
5. *The library is a groaning organism.*

Whether one looks to Ranganathan's original *Five Laws of Library Science* or to any one of the many new interpretations of them, one central idea is immediately clear: Libraries and the Web exist to serve people's information needs.

The Five Laws of the WWW

The *Five Laws of the WWW* are inspired by the "*Five Laws of Library Science*" which were the seed of all of Ranganathan's practice. These laws form the foundation for the Web by defining its minimum requirements. While the laws seem simple on first reading, think about some of the conversations on the Web and how neatly these laws summarize much of what the Web community believes. Although they are simply stated, the laws are nevertheless deep and flexible. These laws are:

1. **1st Law - WWW resources are for use.**
2. **2nd Law - Every user his or her WWW resource.**

3. **3rd Law - Every WWW resource its user.**
4. **4th Law - Save the time of the user.**
5. **5th Law - The WWW is a growing organism.**

The WWW consists of contributions from anyone who wishes to contribute, and the quality of information or the value of knowledge is opaque, due to the lack of any kind of peer reviewing. Moreover, the Web is an unstructured and highly complex conglomerate of all types of information carriers produced by all kinds of people and searched by all kinds of users.

This new revised version of Ranganathan's laws gives us the grounding for librarians' profession just as the 1931 original did. The Web exists to help users achieve success through serving user information needs in support of the world community. Information needs are met through web pages and documents appropriate to web users. In fact, the *Five Laws of the Web* are really the foundations for any web user-friendly information system. What they require is universal access as a right of cyber citizenship in the information age. Like most laws, they look simple until you think about them. We explain each law here:

1st Law: Web resources are for use

The WWW was designed to meet the human need to share information resources, knowledge, and experience. Webmasters want people to interact with their web sites and pages, click on them, read them, print them if they need to, and have fun. So web sites are not statues or temples users admire from a distance. This law implies that the Web is for using and learning and information is there to be used. This law is very important because information serves no purpose if it is not utilized and at least available for people to attempt to learn. The role of the Web is to serve the individual, community and service, and to maximize social utility in the communication process.

The dominant ethic of the WWW is service to society in general. The question "how will this change improve the service that the Web gives better?" is a very effective analytical tool. Another aspect of this law is its emphasis on a mission of use both by the individual seeker of truth and for the wider goals and aspirations of society. So "information is for use and should not be hidden or altered from people".

The Web is central to freedom, intellectual, social, and political. A truly free society without the Web freely available to all is an oxymoron. A society that censored the Web is a society open to tyranny. For this reason, the Web must contain and preserve all records of all societies, communities and languages and make these records available to all. We should put the emphasis on free access to information. Old web pages should be protected by Internet Archive (www.archive.org) and national libraries for future users. The WWW of the future must be one that retains not only the best of the past but also a sense of the history of the Web and of scholarly communication.

The WWW must acquire materials and make them accessible so they can be used. The Web needs to be accessible to users. A webmaster who has faith in this law is happy only when the users read and use his web pages. As some webmasters are currently closing their files by password-protected systems and others charging fees and introducing fines, law one admonishes: *Web resources are for use.*

What we are producing and delivering via the WWW and how well we are doing that, are the tangible results of the Web. So what is best practice now and what does this indicate for the future of the Web?

Just as Newton's first law of motion ("A body at rest remains at rest unless acted upon by an outside force") is a statement of the obvious, the 1st law of the WWW also puts forth an obvious and elemental principle. But even so, it is a law that is often violated in the practice and use of the Web. Medieval and monastic libraries, as an extreme example, were chained books to the shelves. The books literally were attached to the shelves with brass chains and could only be used in a single location. Obviously, this was done primarily for preservation of the books rather than to facilitate their use. On the other hand, it might be argued that this method of controlling access helped prevent theft and thereby facilitated use!

But you don't have to go all the way back to medieval times to find ways by which librarians can obstruct the use of library materials. Limiting access to books and information resources has prevailed through time, and exists even today. Maintaining special web collections with limited access; storing materials off-site; restricting access to web resources based on memberships, fees, or even by selecting materials that are contracted in such a way as to limit use to particular classes of users (such as when a public library, or a library that is open to the public, eliminates print resources in favor of an electronic version of the material that is only accessible to certain users with passwords) are all modern equivalents of chaining books to the shelves. And all bring into question whether the Web is adhering to the 1st law: *Web resources are for use.*

Another aspect of this 1st law is that either the WWW is about service or it is about nothing. In order to deliver and reap the rewards of services, the Web must identify the benefits that society can reasonably expect and then devise means of delivering those benefits. Service always has a purpose and of course, price, and the Web has a purpose. If web resources are for use, what happens to unused resources?

The WWW relies on user-orientation to justify and develop the Web operations. **Suominen** called this '**userism**'. At the outset, let us distinguish between good and valuable user-orientation on the one hand, and naive, biased and ideological userism on the other hand. One can speak of the latter when users' interests are assumed, self-evidently, as the only possible rationale for the Web operations, to the extent that no other rationales are even considered. This can be illustrated by a simple example. There is something particularly convincing in the claim that

1. The WWW exists for users. Therefore, the interests of users must be the basis of the Web operations;
2. The WWW exists for researchers and writers, so the interests of researchers and writers should be central in the Web policies;
3. The WWW exists for society, and it should serve the interests of society.

It can be argued that these three assertions are not mutually exclusive, for surely the interests of society are those of the cybercitizens, so claims 1 and 2 are included in claim 3.

Furthermore, one might assume that these three different categories are collective that individual interests reduce to collective interests by way of the collective culture contributing to the creation of individuals, 'culture speaks in us'.

This law dictates the development of systems that accommodate the use of web resources. For instance, updating and regular indexing of web site resources facilitates the use of site resources and the Web in general.

2nd Law: Every user his or her WWW resource

This law has many important implications for the WWW. This law reveals the fundamental need for balance between making web resources and the basic right of all users to have access to the web resources they need anywhere in the world. This makes diffusion and dissemination very important; each web resource should call to mind a potential user.

A web site must formulate access policies that ensure that the collection it is building and maintaining is appropriate and adequate to fulfill the expectations of its community of users. In other words, the collection must be appropriate to the web site's mission. A web site must contain resources appropriate to the needs of *all* its users. Any web site that limits access in any way must ensure that this restriction does not prevent adequate access to the collection by the users that web site was created to serve. Access policies also have implications for search engines.

However, there is an even more practical aspect to this law. Webmasters must know their users well if they are to provide them with the materials they need for their research or that they wish to read. A responsibility, therefore, of any webmaster is to instruct and guide users in the process of search for web documents they need for enjoyment, education or research. Clearly, it is the business of webmasters to know the user, to know the web resources, to actively help in the finding and retrieving by every user of his or her web resource, and to help search engines in the process of indexing web sites. Webmasters need to ask themselves:

Who might want to access information resources?

Who will or won't have access?

What are the issues surrounding access to printing, passwords, etc. ?

Webmasters must acknowledge that users of web sites, themselves included, use and value different means of communications in the pursuit of knowledge, information and entertainment. Web sites must value all means of preserving and communicating the records and achievements of the human mind and heart. This 2nd law dictates that the WWW serves all users, regardless of social class, sex, age, ethnic group, religion, or any other factor. Every cybercitizen has a right to information. Webmasters and search engine designers should do their best to meet cybercitizens' needs.

3rd Law: Every WWW resource its user

When a WWW user searches the Web, or gains access to the Web's services, there are certain web resources that will meet his or her needs. It is webmasters' job to ensure that the connection between the user and the web resources is made and that connection is as practical, easy and speedy as possible. Appropriate arrangement of documents in a web site is also an important means of achieving this objective of the 3rd law.

If a WWW resource is secretly published by a web site, but its diffusion and dissemination otherwise kept secret, the web resource may not be readily discovered and retrieved until the user has reached a crisis in his or her research. At such a time, a frustrated user may seek out a webmaster or someone else with knowledge of the needed web resource's existence, or may simply stumble upon it by serendipity. While either scenario may represent a happy ending for the user, they are not the preferred model of web service. And in the worst case, the web resource may remain invisible indefinitely.

How can a webmaster find a user for every web resource? There are many ways in which a web site can actively work to connect its resources to its users:

- Distribution of new WWW resources via mailing lists, listservs and discussion groups;

- Making new web resource list on the home page of the site, etc.;

- Submitting resources to popular search engines and directories, which is the most common way of indexing the new resources of a web site.

The use of a structured, well-organized and more categorized site map/index is a necessity, as it ensures uniformity of treatment of various web resources on similar topics. It should be simple, and easy to use. This is something most webmasters probably feel that they already do, but their site maps are not always clear and easy to use. Also important is a correct link to WWW resource, as mislinking and misindexing a resource can make it all but invisible to the user and, for all practical purposes, lost. To help users to find resources that are topically related, web site designers should use navigational links.

The point here is that webmasters should add content with specific user needs in mind, and they should make sure that users can find the content they need easily. They should make certain that their content is something their users have identified as a need, and at the same time make sure they do not clutter up their web site with content no one seems to care about. Webmasters need to continue adding unique content to their web sites, because the high quality content is everything.

3rd law is the most sensible, and it is consistently broken by most webmasters and web writers on most subjects. This law stipulates that a WWW resource exists for every user, and that resource should be well described and indexed in the search engines' indexes, displayed in an attractive manner on the site, and made readily available to users. This law leads naturally to such practices as open access rather than closed files, a coherent site arrangement, an adequate site map, and a search engine for each site. "It should be easy for users to search for information from any page on a site. Every page should include a search box or at least a link to a search page" (Google).

4th Law: Save the time of the user

This law presents the biggest challenge to the Web administrators, webmasters and search engine designers. Webmasters should always bear in mind that the time of users is very important and precious. A WWW must always formulate policies with the information needs of its users in mind. Web site collection must be designed and arranged in an inviting, obvious, and clear way so as not to waste the time of users as they search for web resources they need.

This 4th law has both a front-end component (make sure people quickly find what they are looking for) and a back-end component (make sure our data is structured in a way that information can be retrieved quickly). It is also imperative that we understand what goals our users are trying to achieve on our site.

Webmasters have helped save the time of the user by creating a user friendly web site. When a site has been finished, uploaded and tested with users, their experiences will be worth reading. Perhaps then, the question is that "is the web site user-friendly?" A webmaster should think about users and how to attract them, develop for them, cater to them, if s/he wants to satisfy the Web community. We need to remember that the webmasters' job is to help web users research effectively and efficiently, to update web sites, and to make them easy to navigate. So user friendliness and usefulness are important.

Perhaps this law is not so self-evident as the others. None the less, it has been responsible for many reforms in web site administration. A web site must examine every aspect of its policies, rules, and systems with the one simple criterion that saving the time of the user is vital to the web site's mission.

There are other ways to satisfy this law. A well-planned and executed site map saves the time of the user. Saving the time of the user means providing efficient, thorough access to web resources. It means satisfied WWW users. This is the prime measure of

the web site's success; disappointed or frustrated users mean that web site has failed in its duty and its responsibility. This law might be restated as: *Serve the user well*.

In order to save the time of the user, web sites need to effectively and efficiently design systems that will enable the users to find what they are looking for quickly and accurately, as well as to explore the vast amount of collection of information available that could potentially be useful. This 4th law emphasizes efficient service to the users, which implies a well design and easy-to-understand map/index to the site.

5th Law: The WWW is a growing organism

The WWW reflects the changes in our world and will continue to grow as we move along in life and contribute to its riches. It is indeed a growing organism. We need to plan and build with the expectation that the WWW and its users will grow and change over time. Similarly we need to keep our own skill levels moving forward.

The WWW presents an interesting dilemma for librarians. For while only about 50,000 - 70,000 books are published each year in the United States, the World Wide Web contains an ever-growing and changing pool of about 420 million web pages. When a book is published, it has been assessed by editors and publishers, and hopefully has some value. Moreover, when a web page is published, it has simply been uploaded to a server somewhere. There are no guidelines for the Web. Anyone can publish--and does. Librarians can play an important role in weeding through the dross and establishing annotated lists of links that patrons can feel confident about using. The boundless resources found on the WWW benefit from a librarian's expertise in such areas as indexing and cataloguing, as well as search techniques; there will be an increased demand for these types of skills as users demand more value from the searches that they conduct.

Today, the Google index of the WWW contains over 10 billion web pages (**Google, 2008**) and the Web is growing at a rapid rate, providing a huge source of information for users and a huge potential client base for businesses who have a web presence. The Internet Archive is building a digital library of web sites and other cultural artifacts in digital form. Like a paper library, it provides free access to researchers, historians, scholars, and the general public. Its information collection contains about 50 billion web pages. Its wayback machine, which currently contains over 400 terabytes of data and is growing at a rate of about 12-16 terabytes per month, is the largest known database in the world, containing multiple copies of the entire publicly available WWW (Internet Archive). For better or for worse, the Web plays an important role in all countries and societies.

The 5th law tells us about the last vital characteristic of the WWW and stresses the need for a constant adjustment of our outlook in dealing with it. The Web grows and changes and will do so always. Change and growth go together, and require flexibility in the management of the Web collection, in the use of cyberspace, in the retention and deployment of users, and in the nature of web programs. The Web collection increases and changes, information technologies change and people will

change. So this 5th law recognizes that growth will undoubtedly occur and must be planned for systematically.

Conclusion

What should we learn from these **Five Laws of the WWW**, It is our hope that the reader has gained two things from this essay: first, a new appreciation for the work of the great Indian librarian; second, a renewed perspective on and appreciation of our work as information professionals and librarians. We started this paper with a question "What do these laws mean?". The first four of these reflect the way of thinking that we call userism. According to these laws, the Web's raison d'être lies in its relationship with users and use.

These laws are as applicable to the current practice of the Web as they will be to the Web of tomorrow. These laws are not only applicable to the Web in general but characterize the establishment, enhancement, and evaluation of online databases and digital library services as well. These five laws concisely represent the ideal service and organizational philosophy of the Web. Therefore, we can evaluate web sites by applying the *Five Laws of the Web*.

The **Five Laws of the WWW** helps to identify the Web as a powerful inspiration for technological, educational and social change. The user is rightly the center of attention in this process. So, it is only through understanding user needs and characteristics that webmasters and search engine designers can build tools to help users meet their information needs. Saving the user's time by providing convenient access mechanisms is a principal concern of the Web. Furthermore, some writers and webmasters like to share their information and knowledge with others through web pages. This is because the Web is for use, and can provide a dynamic source of information for all kinds of users.

References:

1. Berners-Lee, T. (1989). Information management: a proposal. Retrieved online at <http://www.w3.org/History/1989/proposal.html>
2. Björneborn, L. (2004). *Small-world link structures across an academic web space: a library and information science approach*. Ph.D. Thesis. Royal School of Library and Information Science, Copenhagen, Denmark. pp. 245-246.
3. Cana, M. (2003). Open source and Ranganathan's five laws of library science. Retrieved online at <http://www.kmentor.com/socio-tech-info/archives/000079.html>.
4. Garfield, E. (1984). A tribute to S.R. Ranganathan, the father of Indian Library Science. Part 1. Life and Works. *Current Contents*, 6, February 6, pp. 5-12.

5. Google (2008). 10 Tips for enterprise search: a best practices tip sheet. Retrieved from www.google.com/appliance/pdf/google_10_tips.pdf.
6. Gorman, M. (1995). Five new laws of librarianship. *American Libraries*, 26 (8), 784-785.
7. Gorman, M. (1998). *Our singular strengths: mediations for librarians*. Chicago, IL: American Library Association.
8. Gorman, M. (1998). The five laws of library science: then & now. *School Library Journal*, Vol. 44, (7), pp. 20-23.
9. Hall, T.D. (2004). Making the starting line-up: best practices for placing diversity at the center of your library. 2004 National Diversity in Libraries Conference" Diversity in Libraries Making It Real". May, 4-5, Atlanta, Georgia. Retrieved online at <http://www.librarydiversity.org/MakingtheStartingLine.pdf>
10. Indian Statistical Institute Library and Sarada Ranganathan Endowment for Library Science. (2007). S. R. Ranganathan - A Short Biography. Indian Statistical Institute. Retrieved from, January 26, 2007, <http://www.isibang.ac.in/library/portal/Pages/SRRBIO.pdf>.
11. Internet Archive (2008). Web Archive. Retrieved online at www.bibalex.org/english/initiatives/internetarchive/web.
12. Kabir, Abulfazal M. (2003). Ranganathan: A Universal Librarian. *Journal of Educational Media and Library Sciences*, Vol. 40, 4, pp. 453-59.
13. Leiter, R.A. (2003). Reflections on Ranganathan's five laws of library science. *Law Library Journal*, Vol. 95, (3), pp. 411-418.
14. Middleton, T. (1999). The five laws of librarianship. Retrieved from <http://www2.hawaii.edu/~trishami/610a.html>
15. Mishra, S. (1998). Principles of distance education. Retrieved from <http://hub.col.org/1998/cc98/0051.html>
16. Ranganathan, S. R. (1931). The five laws of library science. Madras: Madras Library Association.
17. Ranganathan, Shiyali Ramamrita. (2007). The Five Laws of Library and information Science. Delhi, Ess Ess Publications (Reprint).
18. Rettig, J.R. (1992). Self-determining information seekers. *RQ*, Vol. 32 (2), winter, pp. 158-63. Retrieved online at <http://archive.ala.org/rusa/forums/rettig.pdf>

19. Rubin, Richard E. *Foundations of Library and Information Science*. 2nd ed. New York: Neal-Schuman Publishers. 2004.
20. Sayers, W.C.B. (1957). Introduction to the first edition, (Ranganathan, S.R.) The five laws of library science. London: Blunt and Sons Ltd., pp. 13-17.
21. Steckel, M. (2002). Ranganathan for information architects. *Boxes and Arrows*, Retrieved online at, www.boxesandarrows.com/archives/ranganathan_for_ias.php.
22. Suominen, V. (2002). User interests as the rationale of library operations: a critique. *Public Library Quarterly*, Vol. 35 (2). Retrieved from www.splq.info/issues/vol35_2/07.htm
23. Syracuse University, School of Information Studies (2004). Librarians in the 21st century: libraries and the Internet. Retrieved online at <http://iststudents.syr.edu/~project21cent>
24. Thompson, J. (1992). The five laws of library science. *Newsletter on Serials Pricing Issues*, 47, September 13. Retrieved online at, www.lib.unc.edu/prices/1992/PRIC47.
25. WikiPedia: the free online Encyclopaedi, (2008). Retrieved from "[http://en.wikipedia.org/wiki/S. R. Ranganathan](http://en.wikipedia.org/wiki/S._R._Ranganathan)"

A TRIBUTE TO DR. S. R. RANGANATHAN

S.R. Ranganathan



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Occupation	AUTHOR , ACADEMIC , MATHEMATICIAN , LIBRARIAN
Nationality	INDIAN
Genres	LIBRARY SCIENCE , DOCUMENTATION , INFORMATION SCIENCE
Notable work(s)	PROLEGOMENA TO LIBRARY CLASSIFICATION THE FIVE LAWS OF LIBRARY SCIENCE COLON CLASSIFICATION

Shiyali **Ramamrita** **Ranganathan**
http://en.wikipedia.org/wiki/File:Media_S._R._Ranganathan_pronunciation.ogg
([Tamil](#): சீகாழி/சீர்காழி ராமாமிருத ரங்கநாதன், *ciyali rāmāmiruta raṅkanāṭaṇ*)
([August 9, 1892](#) - [September 27, 1972](#)) was a [mathematician](#) and [librarian](#) from [India](#). His most notable contributions to the field were his [five laws of library science](#) and the development of the first major analytico-synthetic classification system, the [Colon classification](#). He is considered to be the father of [library science](#), [documentation](#), and [information science](#) in India and is widely known throughout the rest of the world for his fundamental thinking in the field.

[S. R. RANGANATHAN](#), KNOWN AS THE "THE FATHER OF [LIBRARY SCIENCE](#) IN INDIA," AND RESPECTED BY [LIBRARIANS](#) ALL OVER THE WORLD, PROPOSED **FIVE LAWS OF LIBRARY SCIENCE**. MANY LIBRARIANS WORLDWIDE ACCEPT THEM AS THE FOUNDATIONS OF THEIR PHILOSOPHY (E.G. KOEHLER ET AL., 2000)

THE FIVE LAWS OF LIBRARY SCIENCE ARE SOME OF THE MOST INFLUENTIAL CONCEPTS IN THAT FIELD. SINCE THEY WERE PUBLISHED IN 1931, THESE FIVE LAWS "HAVE REMAINED A CENTERPIECE OF PROFESSIONAL VALUES..." (RUBIN 2004). THESE BASIC THEORIES OF LIBRARY SCIENCE CONTINUE TO DIRECTLY AFFECT THE DEVELOPMENT OF THIS DISCIPLINE AND THE SERVICE OF ALL LIBRARIES.

EDUCATION

Ranganathan, born on [9 August 1892](#), came from a moderate background in British-ruled India. He was born in the small town of [Shiyali](#) (also known as [Sirkazhi/சீர்காழி](#)), in the state of [Tamil Nadu](#) in South India.

Ranganathan began his professional life as a mathematician; he earned B.A. and M.A. degrees in mathematics from [Madras Christian College](#) in his home province, and then went on to earn a teaching license. His lifelong goal was to teach mathematics, and he was successively a member of the mathematics faculties at universities in [Mangalore](#), [Coimbatore](#) and [Madras](#) (all within the span of five years). As a mathematics professor, he published a handful of papers, mostly on the history of mathematics and his career as an educator was somewhat hindered by a handicap of [stammering](#) (a difficulty Ranganathan gradually overcame in his professional life). The Government of India awarded [Padmashri](#) to Dr. S.R. Ranganathan for valuable contributions to Library Science.

EARLY CAREER

In 1923, the University of Madras created the post of University Librarian to oversee their poorly organized collection. Among the 900 applicants for the position, none had any formal training in librarianship, and Ranganathan's handful of papers satisfied the search committee's requirement that the candidate should have a research background. His sole knowledge of librarianship came from an Encyclopædia Britannica article he read days before the interview.

Ranganathan was initially reluctant to pursue the position (he had forgotten about his application by the time he was called for an interview there). To his own surprise, he received the appointment and accepted the position in January 1924.

At first, Ranganathan found the solitude of the position was intolerable. After a matter of weeks, complaining of total boredom, he went back to the university administration to beg for his teaching position back. A deal was struck that Ranganathan would travel to London, to study contemporary Western practices in librarianship, and that, if he returned and still rejected librarianship as a career, the mathematics lectureship would be his again.

Ranganathan travelled to University College London, which at that time housed the only graduate degree program in library science in Britain. At University College, he earned marks only slightly above average, but his mathematical mind latched onto the problem of classification, a subject typically taught by rote in library programs of the time. As an outsider, he focused on what he perceived to be flaws with the popular decimal classification, and began to explore new possibilities on his own.

One of his most powerful insights at this time was what was later referred to as the Acknowledgment of Duplication, which states that any system of classification of information necessarily implies at least two different classifications for any given datum. He anecdotally proved this with the Dewey Decimal Classification (DDC) by taking several books and showing how each might be classified with two totally

different resultant DDC numbers. (Simply put, for example, a book on "warfare in India" could be classified under "warfare" or "India". Even a book on warfare in general could be classified under "warfare," "history," "social organisation," "Indian essays," or many other headings, depending upon the viewpoint, needs, and prejudices of the classifier.) To a mind such as Ranganathan's, a structured, step-by-step system acknowledging each facet of the topic of the work was immensely preferable to the anarchy and "intellectual laziness" (as he termed it) of the DDC. The importance of this concept, given the poor technology for information retrieval available at that time, cannot be underestimated. Even in modern terms the concept is attractive for its simplicity, predictability, and depth in comparison to classification on a linguistic level, such as is used by search engines such as Google.

He began drafting the system that was ultimately to become the Colon Classification while in England, and refined it as he returned home, even going so far as to reorder the ship's library on the voyage back to India. He initially got the idea for the system from seeing a set of Meccano in a toy store in London. Ranganathan returned with a powerful passion for libraries and librarianship and a vision of its importance for the Indian nation. He returned to and held the position of University Librarian at the University of Madras for twenty years. During that time, he helped to found the Madras Library Association, and lobbied actively for the establishment of free public libraries throughout India and for the creation of a comprehensive national library.

Ranganathan was considered by many to be a workaholic. During his two decades in Madras, he consistently worked 13-hour days, seven days a week, without taking a vacation for the entire time. Although he married in November 1928, he returned to work the afternoon following the marriage ceremony. He and his wife Sarada had one son, a few years later, but they stayed married until Ranganathan's death.

The first few years of Ranganathan's tenure at Madras were years of deliberation and analysis as he tackled the problems of library administration and classification. It was during this period that he produced what have come to be known as his two greatest legacies: his five laws of library science (1931) and the colon classification system (1933).

Regarding the political climate at the time, Ranganathan took his position at the University of Madras in 1924. Gandhi had been imprisoned in 1922 and was released around the time that Ranganathan was taking that job. Ranganathan sought to institute massive changes to the library system and to write about such things as open access and education for all which essentially had the potential to enable the masses and encourage civil discourse (and disobedience). Although there's no evidence that Ranganathan did any of this for political reasons, his changes to the library had the result of educating more people, making information available to all, and even aiding women and minorities in the information-seeking process.

LATER CAREER

After two decades of serving as librarian at Madras -- a post he had intended to keep until his retirement, Ranganathan retired from his position after conflicts with a new

university vice-chancellor became intolerable. At the age of 54, he submitted his resignation and, after a brief bout with depression, accepted a professorship in library science at Banaras Hindu University in Varanasi, his last formal academic position, in August 1945. There, he cataloged the university's collection; by the time he left four years later, he had classified over 100,000 items personally.

Ranganathan headed the Indian Library Association from 1944 to 1953, but was never a particularly adept administrator, and left amid controversy when the Delhi Public Library chose to use the Dewey Decimal Classification system instead of his own Colon Classification. He held an honorary professorship at Delhi University from 1949 to 1955 and helped build that institution's library science programs with S. Das Gupta, a former student of his. In 1951, Ranganathan released an album on Folkways Records entitled, Readings from the Ramayana: In Sanskrit Bhagavad Gita.

Ranganathan briefly moved to Zurich, Switzerland, from 1955 to 1957, when his son married a European girl; the unorthodox relationship did not sit well with Ranganathan, although his time in Zurich allowed him to expand his contacts within the European library community, where he gained a significant following. However, he soon returned to India and settled in the city of Bangalore, where he would spend the rest of his life. While in Zurich, though, he endowed a professorship at Madras University in honor of his wife of thirty years, largely as an ironic gesture in retaliation for the persecution he suffered for many years at the hands of that university's administration.

Ranganathan's final major achievement was the establishment of the Documentation Research and Training Centre as a department and research center in the Indian Statistical Institute in Bangalore in 1962, where he served as honorary director for five years. In 1965, he was honored by the Indian government for his contributions to the field with a rare title of "National Research Professor."

In the final years of his life, Ranganathan finally succumbed to ill health, and was largely confined to his bed. On September 27, 1972, he died of complications from bronchitis.

Upon the centenary of his birth in 1992, several biographical volumes and collections of essays on Ranganathan's influence were published in his honor. Ranganathan's autobiography, published serially during his life, is titled A Librarian Looks Back.

AN EXPLANATION OF THE FIVE LAWS

FIRST LAW: BOOKS ARE FOR USE

The 1st law of library science is "Books are for use" Which implies that a book should be durable & the material of which it is made should have longevity. The 1st law insists upon intensifying the use of books by every possible method and it urges the library profession to select such edition of the book which is readable & pleasing to the eye. A book is to select for easy understanding by the majority of the user of the

library. A book that is written with flair for simple style, language & clarity of expression should be purchased...

The 1st law of library science is 'Books are for use', which implies that the main task of a library is to circulate books to its users (rather than to protect and conserve books). Towards this end any obstacle should be removed as far as it is possible, making it as easy for a user to obtain a book, as it can be achieved. Obviously, losing a book for whatever reason makes it impossible for readers to use it, thus making the protection and preservation of book a means of fulfilling this law. Nevertheless, making a book accessible to readers is the primary goal. This law may be seen as the main (perhaps the only) law, for which the next laws are merely commentaries.

SECOND LAW: EVERY READER HIS OR HER BOOK

Any patron from the library community should have access to the books in the library. Any person has a right to use the collections housed in the library. There are not certain books or collections that some audiences within the population can not access. Collections should be developed that every part of the population will be interested in.

THIRD LAW: EVERY BOOK ITS READER

This law is about items in the library's collection, and who uses them. Each book in the library has a member of the community that will find the book useful or interesting. One of the major developments that Ranganathan contributed through this law is the idea that if a book is not being used often it needs exposure to groups of readers who will find it useful.

FOURTH LAW: SAVE THE TIME OF THE READER

This law makes it clear that if readers find what they are looking for in a timely manner they will be more satisfied, and more likely to feel like their needs have been met. This not only makes library service more efficient, but also makes the reader feel like their search has been an effective one.

FIFTH LAW: THE LIBRARY IS A GROWING ORGANISM

This law says that the library is dependent on life and change. Without the human and organizational changes that occur, the library would neither function properly, nor meet its purpose.

References:

1. Indian Statistical Institute Library and Sarada Ranganathan Endowment for Library Science. (2007). S. R. Ranganathan - A Short Biography. Indian Statistical Institute. Retrieved from, January 26, 2007, <http://www.isibang.ac.in/library/portal/Pages/SRRBIO.pdf>.

2. Kabir, Abulfazal M. (2003). Ranganathan: A Universal Librarian. *Journal of Educational Media and Library Sciences*, Vol. 40, 4, pp. 453-59.
3. Koehler, Wallace , Jitka Hurych, Wanda Dole, and Joanna Wall (2000). Ethical Values of Information and Library Professionals -- An Expanded Analysis. *International Information & Library Review*, Vol. 32, (3/4), pp. 485-506.
4. Ranganathan, Shiyali Ramamrita. (1931). *The Five Laws of Library Science*. London: Edward Goldston.
5. Ranganathan, Shiyali Ramamrita. (2007). *The Five Laws of Library and information Science*. Delhi, Ess Ess Publications (Reprint).
6. Rubin, Richard E. *Foundations of Library and Information Science*. 2nd ed. New York: Neal-Schuman Publishers. 2004.
7. WikiPedia: the free online Encyclopaedi, (2008). Retrieved from "[http://en.wikipedia.org/wiki/S. R. Ranganathan](http://en.wikipedia.org/wiki/S._R._Ranganathan)"

Book Reviews:

1. Torras, Maria-Carme and Saetre, Tove Pemmer: *Information literacy education: a process approach: Professionalising the Pedagogical role of academic libraries*. Oxford, U.K: Chandos Publishing, 2009, xiii, 112p. ISBN.13: 978-1-94334-386-8(pbk).

Information literacy goes much beyond librarianship. It is a tool to become an aware citizen, updated professional, and is a grass root process for continued education for empowering the citizens and consequently successful and responsible civic living. But it is not anything new for librarians who have been imparting user education to their clients since long. Much has been written on the need, purpose and techniques of information literacy. But this small book deals with the restricted aspect of information literacy education to be taken up by the academic librarians in higher education institutions. Academic library is viewed as a learning centre with teaching role, and the librarian as an "information empowerment specialist". The authors aspire to "professionalise the educational role of academic librarians"(p.1), and endeavor to explore "practical ways in which library's pedagogical involvement in higher education can be strengthened". A big role! The book places equal emphasis on library as an institution and agency of higher education and the LIS professional as an individual educator. It is a high status role for the beleaguered librarians. Library is treated as an integral partner in higher education which is traditionally called the heart of an academic institution. In the backdrop are explained learning processes and theories. Authors perceptions are derived from a Norwegian didactic model given by L. Livelier (1972, 1974) which visualizes how education theory can enrich and professionalise the practice of library education. Learning is a social practice and higher education is socializing into the academic culture. It is enriched by doing and experience.

There are four chapters including the introduction in addition to conclusion marked as chapter five. Introduction lays bare the aim and organization of the book. The second chapter rehashes the process of information literacy and explains the updated role of academic library in higher education setup. The third chapter dwells on the nitty-gritty of, what the authors call, "process-oriented information literacy education". Here is explained and developed the role of LIS professionals as independent educators. The focus is on the didactic relations model (pp. 32-33) wherein categories, namely, learning activities, goals, contents, assessment and didactic conditions interact with one and all are interlinked in a pentagon. All these factors have been explained in depth. The fourth chapter brings out with many details the supervisory role of academic librarians to facilitate research conducted by the students. It explains the stages of information search and writing processes in view of the needs and challenges before the students from selecting, reading, noting, comprehending, using, citing and documenting the literature. The role of academic librarian as a counselor has been adequately highlighted. The book presents a process-oriented approach. "Professionalisation of the information professionals is a key factor to give the academic library the status of the formal learning arena it struggles to obtain" (p. 95). It advocates the case for empowering the librarians so that

they may empower the library users.

The presentation of the text is learning oriented. The book is lucid, illustrated with diagrams and cases of real-like situations in academic libraries. It is studded with diagrams, tables and boxed scenarios. All these add to its value as a learning tool --learning without tears. Cumulated references in alphabetical sequences are helpful for further delving in the wider areas of learning theories, academic libraries, information literacy and higher education. This little book is worth reading by all those concerned which lives up to its stated aim in its lengthy title.

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2. Webster, Peter M.: *Managing electronic resources: new and changing role of librarians*. Oxford: Chandos Publishing, 2008, xvi, 236p. ISBN: 978-1843-343684. Pr. UK £ 39.95

We are an e-gen and everything around is getting, round to e.. it is not simply a fad, but now a paradigm shift. We are overwhelmed with variety, pace, diversity and quantity of electronic information and its sources. Librarians have always adopted new technologies and have donned new rules to expand services to their users. E-resources and IT has given new opportunities. New models for e-materials have emerged, and we call them Electronic Resource Management Systems (ERM). Earlier e-journals made most of the collections, now reference books and e-books are growing. There is unprecedented amount of information in varied -forms available at the click of the mouse. Google and Yahoo provide universal access to and discovery of information. But everything cannot be accessed with a single web search. Webster discusses the unified information environment - where all needed information can be comprehensively discovered and accessed using common search methods without any barrier of software needs, formats of e-vendors. The linking role of librarians is emphasized to provide universal discovery and access (UDA) "Librarians are making links from sources of citation to many available sources of content" (p.19).

Webster also discusses the technological, political, social and fragmented (silos) environment which pose barriers to universal access. He discusses all these issues with depth and details. This book has thirteen chapters including the introduction. He lays threadbare the idea of universal access and discovery and the role of new electronic content tools such as link resolver, proxy servers and social networking tools for an integrated library services (ILS) and the challenges they pose and opportunities they afford. Now OPACs and old search engines are being replaced with new information management tools with innovative interfaces and search services for a seamless user experience. The author discusses in detail open access sources and standards (and how these inhibit innovations). The author suggests close collaboration between librarians, e-publishers, vendors and aggregators to tie up and serve diverse e-resources. This book is very useful for librarians, publishers, content managers and knowledge management experts to build more powerful universal

information resources than we have now.

or advice (p.xv)..

The book enshrines and presents the facts in a comfortable style characteristic of Chandos publications and exhibit high quality of manufacturing standard. So it is highly recommended to e-collection management librarians anywhere in the world.

Dr R G Garg

School of Studies in Library & information Sc.
Jiwaji University, Gwalior, M.P.

3. Basa, K. K. Mohd. Rehan & Gupta, Ravindra: *Museology: a comprehensive bibliography and webliography*. New Delhi: Serial Publication, 2007, xxxvi, 313p., ISBN: 978-81-8387-103-7

A well-organized information system is a pre-requisite for the growth and development of any discipline. Bibliography is one such useful information system since it acquaints the scholars and research workers with the work already done in the past on a particular subject, region or place by various authors. Quick and easy access to information is vital to the development of various fields of Knowledge. Therefore, it is essential that relevant information be brought to the attention of the professional, administrators, and researchers who have urgent need of it. In this respect, bibliography plays an important role. There was a time in the past, when it was possible for a scholar to keep himself up to date and well informed on current literature in his field of interest. But due to increase in the amount of literature available, it has become more and more difficult for him to do so. The references on Museology, Museum and Heritage Management and the related fields distributed over numerous journals, Monographs, Memoirs, Internet database and other publications that are not easily accessible to research. This bibliography is definitely an important tool for research scholars

This bibliography on Museology indexes 2311 monographs (books), journal articles, research papers, thesis, notes, museum web sites, etc. The bibliography is aimed at covering scholarly literature on Museology and related fields. The present volume includes 10 sub-fields i.e. Museum Management, Conservation, Preservation and Restoration, Exhibit Design, Display & Collection, Cultural heritage management and Eco-Museum, Museum education, Training and personnel, Museum Computerization and Documentation, Museum Security, Museum Marketing, Museum and Public (visitors), Museum, Folk Art and Folklore, Museums in India and the World.

In this bibliography authors added a special feature i.e. Webliography. A critical guide to electronic resources of the subjects is on the World Wide Web and CD-ROM, including electronic texts, HTML-encoded texts, hypertexts, secondary works, commentaries, and indexes.

Each entry in the bibliography contains the information such as name of Author/Editor (surname, forename), Title of book, Place of publication, Name of

publisher, Year of publication and total pages of book. To facilitate quick references from any desired viewpoint the authors provided three alphabetical indices, *vis.*, Subject Index, Author Index and Title Index, referring to the text by the serial number, have been appended

I sincerely hope that this bibliography would be useful for Museum Curators, Heritage Managers, Administrators, Research Scholars, Anthropologists, and other personnel related to this field.

Sudhir Shrivastava

Indira Gandhi Rashtriya Manav Sangrahalaya
Bhopal (M.P.)

Forthcoming Seminar/Conferences/Workshops, Refresher Coerces in India

International Conference on Digital Libraries (ICDL 2010), New Delhi.

Dates: 23-26 February 2010.

Web: <http://www.teriin.org>.

For More detail please Contact: Debal C. Kar, Organising Secretary, ICDL 2010TERI, Darbari Seth Block, India Habitat Place, Lodhi Road, New Delhi-110003, Tel. (+9111) 2468 2100 / 2468 2111. Extn 2724Fax (+9111) 2468 2144 / 2468.

6th Conferences on Library and Information Services in Astronomy (LISA VI), Pune, India

Dates: 14-17 February 2010.

Hosted by: The Inter-University Centre for Astronomy and Astrophysics (IUCAA), Pune, Maharashtra.

Theme of the conference: "21st Century Astronomy Librarianship: from new ideas to action" If any one interested in this conference then he/she can contact Mrs. Nirupama Bawdekar, Scientific Officer "D", Inter-University Centre for Astronomy and Astrophysics (IUCAA), Post Bag No.4, Ganeshkhind, PUNE - 411 007, India. <mailto:nub@iucaa.ernet.in> before 30th April 2008.

XXVII IASLIC Conference 2009 on the theme of "Library/ Information Users in Digital Era" at the KIIT/KISS, Bhubaneswar.

Dates: December 26-29, 2009.

For further detail: <http://www.iaslic1955.org>

15th International Conference on Management of Data (COMAD 2009) at Infosys Technologies campus, Mysore.

Dates: December 9-11, 2009.

Organized by: The International School of Information Management (ISiM), University of Mysore. More: <http://www.isim.ac.in/comad2009>

XXVI IATLIS National Conference, 2009 on Envisioning Employable LIS Courses in Developing Countries for the Emerging Knowledge Society.

Dates: 25-27 November 2009

Organised by: Department of Library and Information Science, The University of Burdwan, Golapbag, Burdwan - 713104. West Bengal More: <http://www.buruniv.ac.in>

International Conference on Academic Libraries 2009 (ICAL 2009),

Conference Centre, University of Delhi, India

Dates: 5-8 October 2009.

Organized by: University of Delhi

For more details please click on the following
<http://www.youtube.com/watch?v=n9RxfeNR4Gg>. Or <http://library.du.ac.in/ocs>
or <http://crl.du.ac.in/ical09/>. or <http://library.du.ac.in/ocs/index.php/ical/index>

12th National Convention on Knowledge, Library and Information Networking (NACLIN 2009) at Panjab University, Chandigarh.

Dates: September 22-25, 2009.

Organised by: DELNET jointly with Panjab University, Chandigarh. Theme: "Managing Knowledge, Technology and Change in Libraries".

For more details: <http://www.naclin.org>

One Day Workshop On Intellectual Property Rights for the 21st Century Librarian, Bangalore Management Academy (BMA).

Date: 16th September 2009.

More: <http://www.bmaindia.com/downloads/Workshop-on-IPRs.pdf>. Information Compiled by: Anjaneya Nayak, Asst. Librarian, Bangalore Management Academy, #17, Ashirwad Towers, Doddanakundi Cross, Marathahalli Post, Bangalore - 37.

NCSI-IDRC Workshop on Library Automation Packages and Digital Library Software, Bangalore.

Dates: August 3rd to 7th, 2009.

Location: National Centre for Science Information (NCSI), Indian Institute of Science (IISc), Bangalore.

For details: <http://dharmaganja.ncsi.iisc.ernet.in/workshop>

Two Day National Workshop on Writing Research Papers/Scholarly Articles at Mumbai

Last Date: 31st July 2009

Workshop Date: August 8-9, 2009

Organized by: Gokhale Education Society's College of Education and Research Parel, Mumbai - 400 012 Maharashtra Registration Fees: 600/- for teachers & 400/- for students. (Registration fees include tea, lunch & reading material only)

Venue: Lecture Hall, G.E.S's College of Education and Research c/o R. M. Bhatt High School Building, 2nd Floor, Gokhale Society Lane, Parel, Mumbai-400 012 Ph. No. & Fax No. 022 24136408 e-mail: ges_cer@yahoo.co.in More Details: <http://www.gescer.com/notices.html>

Fourth Workshop on "Creation and Dissemination of Knowledge", New Delhi.

Dates: 27-29 July 2009.

Organized by: Centre for Management of Innovation and Technology, International Management Institute (IMI), New Delhi

Sponsored by: Technology Management Programme Division, Department of Scientific and Industrial Research, Government of India.

Refresher Course on the theme of “Modernization and Networking of Academic Libraries”.

Dates: 7th – 30th July, 2009.

Organized By: The UGC Academic Staff College in collaboration with the Department of Library and Information Science (University of Kashmir). The participants will be accommodated on first come first serve basis and will be paid TA/DA as per UGC norms. The interested and eligible participants are requested to contact: Prof. S M Shafi or Director Head, DLIS, University of Kashmir Academic Staff College. Email: smshafi@kashmiruniversity.net. University of Kashmir, Srinagar. Cell: 9419008599

The form and further details can be downloaded from the University website <http://www.kashmiruniversity.net/events/35.pdf> or can be obtained from Head, DLIS, University of Kashmir, Srinagar.

Instructions to contributors

General guidelines:

Manuscripts submitted must be in English or Hindi. The quality of the language must meet the standards of the international community. The paper should not exceed 15 typewritten pages (A4) double-spaced with wide margins. Also provide the text in electronic form using any exchange standard like RTF or HTML in double spacing; the program will then convert the file. Papers should not have been published before nor be currently under consideration by other journals. Author must submit a duly signed declaration, and to confirm that their article is original, accurate and does not include any libelous statements. The editorial board will not be held responsible for the opinions expressed by the author(s). For faster production, an author may send the paper in a CD and or as an attachment of email, in addition to hardcopy.

References:

Books:

1. Coulmas, F. (1999). *The Blackwell Encyclopedia of Writing Systems*. Oxford, Blackwell Publishers.
2. Brooks, G., Gorman, T.P. and Kendal, L. (eds.) (1993). *Spelling It Out: The Spelling Abilities of 11- and 15-year-olds*. Slough, UK, National Foundation for Educational Research.

Journal articles:

1. Kajii, N., Nazir, T.A. and Osaka, N. (2001). Eye movement control in reading unspaced text: the case of the Japanese script. *Vision Research*, Vol. 41, (19), pp. 25-39.
2. Hirshon, A. (1998). *Academic Library Consortia: Past, Present and Future*. Retrieved online on 10 August 2006 at <http://leigh.edu/{arth5/arh5.html>

Reprints: The first author of each paper will receive 4 reprints free of cost, but not a copy of the journal. Additional reprints are also supplied at cost price on prior information.